

Getting On Track Early for School Success: An Assessment System to Support Effective Instruction

Technical Report: Creating an Assessment of Literacy Skills for Three and Four Year Olds

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Introduction

Many policy makers, scholars, and practitioners have concluded that public investments in pre-K education have the potential to substantially increase children’s cognitive skills, particularly if effective early schooling is integrated with effective instruction in elementary school (Carneiro and Heckman, 2003; Krueger, 2003). Such early investments appear especially important for children whose parents have low levels of education and for whom “academic English” – the language of instruction in school and the language of academic discourse – is not the language spoken at home. The beneficial long-term effects on educational attainment, social behavior, and labor market success of early interventions have aroused considerable excitement.

Related, many school systems are now incorporating pre-K education into the traditional K- 12 offerings. This structural change holds great promise to insure that millions of children who otherwise would have started kindergarten behind in basic literacy and math skills, and who would therefore be at risk for learning difficulties, grade retention, and ultimately dropping out of school, can instead be fully prepared to succeed with high levels of educational attainment. While promising, implementing this ambitious structural change also entails many challenges: training, recruiting, and compensating new teachers, funding this expansion of education, integrating the pre- K and the K-3 curriculum, and finding space for pre-K classrooms. These challenges indicate a critical need for research on implementation.

The work we propose here is complementary and equally essential. The government agencies that have historically attended to pre-K education are separate from those that have overseen K-12 schooling. The scholars who have studied these two aspects of childhood have typically been located in different university departments, attended different conferences, published in different journals, and trained practitioners for different labor markets. There is an urgent need to unify thinking so that the experiences during the pre-K to elementary years are instructionally coherent for children and so that the agencies, scholars, and practitioners who must now collaborate will have a common vision of what children need to know and when they need to know it. This reasoning suggests the need for content standards to guide state and district work in integrating pre-K into public schooling.

Our project is to develop objective, valid, and instructionally relevant assessments of children's literacy skills at ages three and four and link these assessments to existing assessments for children ages five through eight. We are in a distinctive position at the University of Chicago to join the forces of research and practice to create and field test these assessments. Specifically, we are combining the knowledge and expertise of members of the Committee on Education at the university and practitioners from our four charter schools as well as other schools in the city linked to the university's Urban Education Institute.

Preschool Literacy Research

Why Reading?

Reading proficiency underlies success in multiple aspects of life. Strong reading comprehension skills have implications for academic success in diverse areas of study, such as social studies, science and math (Snow, 2010; Snow, Burns & Griffin, 1998). Success in the workforce also depends on reading comprehension skills and individuals with lower reading comprehension skills are at a greater risk for unemployment. For example, while only six percent of the high literacy workers are unemployed, the percentage is 20 for the low literacy workers (Sum, 1992). Furthermore, good readers are more likely to be better integrated into society and engage in civic activities and less likely to be alienated from society (Venezky, 1992).

Achievement Gap in Reading Comprehension

Differences in reading proficiency emerge during early childhood years. Children's reading comprehension skills greatly vary starting from the beginning of elementary school years, the roots of which go back to preschool years, and the gap remains persistent over time. A study by Stanovich and Cunningham (1997) found that differences in reading comprehension in first grade predict reading comprehension 10 years later, at 11th grade. A significant proportion of the individual variation is explained by differences between children's socio-economic background and minority status (e.g. Bowey, 1995; Foster et al., 2005; National Institute for Literacy, 1997; Raz & Bryant, 1990; White, 1992; Snow, Burns, & Griffin, 1998; Wells, 1985; Whitehurst, 1997). The correlations between parental socio-economic status (as measured by parental income, occupation and education) and reading comprehension vary around 0.3 to 0.7, indicating a moderately strong relation (Hecht, Burgess, Torgesen, Wagner, & Rashotte, 2000). In 2010, on the National Assessment of Educational Progress reading assessment, nearly half of the fourth-grade children from disadvantaged backgrounds (i.e. children who are eligible for free lunch) exhibited reading ability below the basic level, whereas only 20% for children who are not eligible for free lunch exhibit this level of reading. According to the same report, only 22% of White students but 50% of the minority students (Black, Hispanic, and American Indian) read at the below basic level. The early differences have significant implications for later years, since only 50% of the minority students have a chance of receiving a high school diploma (Swanson, 2003). Reducing inequality in reading comprehension by middle childhood thus becomes an essential component of any effort to improve the life chances of low-income, minority children. Given that

differences in children's reading comprehension have important implications for later success in life, and given that a significant achievement gap exists between children from different backgrounds, reading comprehension difficulties should be remediated or prevented before they emerge as challenges. These efforts should focus on identifying the foundations of children's reading comprehension skills built prior to conventional reading instruction. With this in mind, we next review skills required for successful reading comprehension and their earlier developing precursors.

Foundations of Children's Reading Comprehension

Successful reading requires two component skills: decoding and comprehension (Hoover & Gough, 1990). Decoding refers to the first task children face when first exposed to reading; the bottom-up identification of printed words by mapping orthographic representations to phonological representations, and then accessing entry of the phonological form in the mental lexicon. An average reader becomes comfortable with decoding the written language around 3rd grade. However, the ultimate aim of reading is not only being able to decode the text, but also comprehend it. As decoding ability is established, a transition from learning to read to reading to learn is observed (e.g. Dickinson, & Freiberg, in press; Roth, Speece, Cooper, 2002). At these later ages, children are asked to process the lexical information accessed based on the orthographic representation of the text to derive sentence and discourse interpretations, to make inferences and link the information in the text to their background knowledge. During this process, children confront new and increasingly difficult words and associated concepts. They use their decoding skills, but also oral language skills, general knowledge to make inferences by analyzing and synthesizing text, mastering increasingly complex syntax, and identifying and clarifying multiple viewpoints (Willson & Rupley, 1997). These newly acquired reading comprehension skills increase children's capacity to build knowledge as they read (Guthrie et al., 2004; Milholic, 1994; Cromley & Azevedo, 2007; NRP, 2000). Children who know how to apply sophisticated reading strategies persevere through difficult texts and greatly further their own ability to comprehend challenging work (Chall, 1983; Willson & Rupley, 1997). Children who have difficulty with the challenges faced during this transition experience decreased motivation to read, also referred to as the "fourth grade slump" (Chall, Jacobs, & Baldwin, 1990). Below we review the component skills that develop at earlier years and provide the basis for strong reading comprehension skills at later stages.

Reading comprehension is first built upon decoding skills. This initial ability to decipher the code of the written text is a prerequisite for being able to understand a written text (Hoover & Gough, 1990; Kendeou, vanden Broek, White, Lynch, 2009; Velluntino, Tunmer, Jaccard & Chen, 2007). Indeed, poor versus good comprehenders at 3rd and 5th grade differ in the speed at which they decode words, suggesting that decoding skills might serve as a bottleneck for reading comprehension (Perfetti & Hogaboam, 1975). Similarly, weak decoding skills are also suggested to take up cognitive resources that could be devoted to the comprehension, thus impede the comprehension processes (Cutting & Scarborough, 2006). Decoding skills in turn rely on code-related skills that develop during preschool years. These earlier developing skills, also referred to as emergent literacy skills or inside-out skills, consist of knowledge of graphemes (naming

letters of the alphabet), phonological awareness (manipulation of individual syllables or phonemes, e.g. saying bat without /b/), phoneme-grapheme correspondence (letter-sound knowledge), print concepts (knowledge of print format) and beginning writing (writing one's name) (Whitehurst and Lonigan, 1998, 2001). The foundational emergent literacy skills in preschool years predict later decoding at the beginning of school (Lonigan et al., 2000; Storch & Whitehurst, 2002, National Early Literacy Panel). The Early Literacy Panel in a recent review notes the correlations between preschool code related skills such as alphabetic knowledge, print knowledge, phonological awareness and school-age reading comprehension hovers around 0.44 to 0.48, indicating a moderately strong relationship. Similarly, Storch and Whitehurst (2002) showed that kindergarten code-related skills explain 58% of the variation in reading ability in 1st grade, and 30% of the variance in reading ability in 2nd grade. Based on these findings, The National Research Council's Committee on the Prevention of Reading Difficulties in Young Children (Snow, Burns, & Griffin, 1998) outlined early literacy-related accomplishments of children around three to four years of age (see table below). According to the report, a typical three year old is expected to be able to know how to hold a book, name a few letters, label books in objects and produce scribbles. A typical four year-old is expected to distinguish print from pictures, attend beginning of sounds and rhymes in words, recite the alphabet, and recognize certain words. This helps us understand what the early differences are that prepare students for later school success.

	Birth-age 3	Age 3-4
Literacy concepts	Recognizes specific books by cover. Knows how to hold books upright. Knows how to turn pages. Listens when read to.	Distinguishes print from pictures in books.
Phonological awareness	Enjoys rhymes, nonsense words.	Attends to beginning sound and rhymes in words. May produce rhymes and alliterations.
Print recognition	May name a few letters and numbers.	Recognizes around 10 letters including those in own name Can recite the alphabet
Reading	Labels objects in books.	Recognizes some words, e.g. STOP or McDonald's.
Writing	Produces letter-like forms and scribbles.	"Writes" lists, thank-you notes as part of play.

The literature cited above not only provides information about the early predictors of decoding, but also makes suggestions regarding how to remediate difficulties in decoding. Specifically, interventions supporting development of code-related skills predict improvement in decoding. For example, according to a recent meta-analysis interventions focusing on phonological awareness account for up to 10% of reading improvement, the contribution is greater for younger children, e.g. preschool children (28%) and for children at risk (28%) (Ehri, Nunes, Willows, Schuster, Yaghaub-Zadeh,

Shanahah, 2001). As compared to the breadth of information on the decoding skills and their early predictors, less is known about the relation between earlier developing skills and later reading comprehension.

As indicated above, reading success requires both decoding and comprehension skills. As children become skilled readers, they are exposed to increasingly more complex texts and read written text in order to comprehend it. Their earlier developing oral language skills emerge to play a larger role in successful reading (e.g. Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg, Poe, 2003; Dickinson & Snow, 1997; Dickinson & Tabors, 2001; Griffin, Hemphill, Camp and Wolf, 2004; Scarborough, 2001). In other words, reading comprehension is built upon earlier developing oral language skills (both production and comprehension), also referred to as outside-in skills. While the effect of code-related, inside-out skills such as phonological awareness on reading success is observed in earlier years where children mainly read a text to decode it, comprehension-related, outside-in skills play a larger role in later years when children strive to comprehend the text. Thus, if young children during preschool ages learn only the systematic phonics they need to decode basic primary texts, at the expense of also learning at the same time how to comprehend, construct, and express more complicated ideas orally, they will not be prepared later on when they confront more complicated written text. The view of language skills not becoming fully influential until later grades is supported by the leading theories of reading development, such as the Simple View (Hoover & Gough, 1990) and the Convergent Skills Model of Reading (Vellutino et al., 2007). For example, Storch and Whitehurst (2002) report that the effect of kindergarten oral language skills on reading ability is stronger at 3rd and 4th grade than at 1st or 2nd grade. Although oral language skills are acknowledged to play a crucial role especially at later stages of reading, there is only a small, but growing, body of literature examining the relations between earlier developing oral language skills in preschool and kindergarten ages and later reading comprehension.

The Relationship between Early Oral Language Skills and Later Reading Comprehension

Oral language skills that develop during early ages and provide the foundation for later reading comprehension include vocabulary, syntax, narrative and academic language use. Among multiple strands of oral language, vocabulary, especially receptive vocabulary, has long been considered as a predictor of reading comprehension (e.g. Tabors, Porche, & Ross, 2003; Vellutino & Scanlon, 1987; Whitehurst & Lonigan, 2001; Mason, Stewart, Peterman, Dunning, 1992). Strong vocabulary skills enable children to more easily access the meaning of phonological representations of the words they decode and thus support comprehension (Roth, Speece & Cooper, 2002). Scarborough (2001) in a meta-analysis reported significant correlations between kindergarten receptive and expressive vocabulary and later reading outcomes. Similarly, Dickinson & Tabors (2001) also showed that kindergarten vocabulary predict 4th grade reading comprehension. A smaller literature on preschool children suggest that preschool vocabulary skills predict later reading and preschool children with vocabulary difficulties are at a higher risk for later reading difficulties (Blatchford, Burke, Farquhar, Plewis, Tizard, 1987; Scarborough, 1990).

Vocabulary skills provide only a limited picture of the foundational skills that support later comprehension. Other more complex language skills such as syntactic or narrative skills are likely to play an important role in comprehension of connected texts. (National Early Literacy Panel, 2009). Indeed, syntactic skills have been shown to be a stronger predictor of later reading comprehension than is early vocabulary (e.g. Demont & Gombert, 1996; Dickinson, 1987; Nation, Clark, Marshall, & Durand, 2004; Share & Leikin, 2004; Walker, Greenwood, Hart & Carta, 1994). Strong syntactic skills enable children to more easily access sentence meanings and thus better comprehend the connected sentences in the text. Similarly, knowledge of syntactic role of the words in a sentence might also aid children in figuring out meanings of ambiguous or new words, which also supports comprehension. Scarborough (2001) in her meta-analysis reported moderately strong correlations between syntax and later reading performance. Specifically for preschool children, Muter, Hulme, Snowling and Stevenson (2004) showed that grammatical knowledge at age four, as measured by a word order correction task, is a stronger predictor of reading comprehension at grade two than early vocabulary skill. Syntax as being more influential than vocabulary is also observed for children with language difficulties. Children with problems in expressive syntax during preschool years suffer from reading difficulties later on and the difficulties are more pronounced than those children with early problems in vocabulary (Scarborough, 1990, 1991).

An oral language skill that is argued to provide the missing link between oral language and later reading comprehension is narrative skill. Familiarity with oral narrative organization, i.e. temporal relations, cause-effect relations, problem-attempt-resolution sequences help children in comprehension of similarly structured written text (Cain & Oakhill, 2003). Although only few studies have examined the link between early narrative and later reading, the findings suggest a positive relation (e.g. Fazio et al., 1996; Feagans & Applebaum, 1986). Kindergarten narrative skills predict later reading comprehension as late as 7th grade (Griffin, Hemphill, Camp & Wolf, 2004; Tabors, Snow, & Dickinson, 2001). In addition to the length of the narrative children produce, the ability to provide causal links and the use of evaluative devices are specific features of the narrative that predict later reading comprehension (Kendeou, van den Broek, White, & Lynch, 2009). Similarly, given an aurally or visually presented story, children's ability to answer factual questions about specific events in the story and inferential questions that refer to events that can be deduced from the story at age 6 correlates with their later ability to answer similar questions about a written text at age 8 (Kendeou, van den Broek, White, 2007).

Familiarity with literate language style during preschool ages has been shown to play a role in reading comprehension. Language has been characterized in terms of an oral-literate continuum. Oral language style (also referred to as contextualized language, conversational language) is mainly used in face-to-face interactions, to share information about the here and now. Literate language style (also referred to as academic language) lies at the other end of the continuum and is more common in written language and in certain forms of oral language, such as planned speeches and shares many features of academic English in written text. Functionally, literate language style is used to talk

about past and future, for making arguments, defending propositions, summarizing information in both fictional and non-fictional texts, sharing information about abstract objects, events, and situations that are removed from the here and now. Structurally, literate language involves rare words, conjunctions, elaborated noun phrases, mental and linguistic verbs, and grammatically complex sentences. Before children are exposed to written text, they become familiar with literature language use in their conversations with parents. In the preschool ages, use of language that carry the features of literate language tend to emerge in conversations that are removed from here and now, for example, when talking about the past or future, during pretend play, when giving definitions or explanations, and around book-reading interactions. Use of literate language in kindergarten predicts children's reading comprehension score at 4th and 7th grade (Dickinson & McCabe, 2001). Preliminary analyses by Demir and colleagues (Demir, Levine, Goldin-Meadow, in preparation) suggest that children's use of literature language in preschool ages, i.e. explanations talk about the past and future, is a significant predictor of their reading comprehension scores at the end of 1st grade.

Environmental Influences on Early Predictors of Reading Comprehension

The ways in which parents interact with their children shape early differences in literacy development indirectly through influences on children's oral language development. With respect to vocabulary, vocabulary size and rate of acquisition widely vary across children and a significant proportion of the variation can be explained by environmental factors (Hoff, 1991, 1998, 2006). One important environmental factor is the parental language input children to which children are exposed. Input characteristics that have implications for children's vocabulary development are quantity and quality of speech (Hoff, 2006). The amount of language input children receive from their parents (e.g. Huttenlocher et al., 1991) and richness of the input they receive, i.e. the diversity of the vocabulary input, the proportion of rare words parents use in their speech (e.g. Rowe, under review, Weizman & Snow, 2001) predict size and growth of children's vocabulary. Other parental factors that have been shown to play a role in vocabulary development include the responsiveness of the parent (e.g. following child's attentional focus) and parental gesture use (Carpenter, Nagell & Tomasello, 1998; Hoff, 2003, Rowe & Goldin-Meadow, 2009). Similar to vocabulary, diversity and complexity of the syntactic forms used in parental speech predict variation in children's syntactic development (Hoff, 1998; Hoff-Ginsberg, 1995; Huttenlocher et al., 2002). Preliminary findings by Demir and colleagues (Demir, Rowe, Levine & Goldin-Meadow, in preparation) suggest that narrative development is also influenced by parental input. Specifically, early discussions about the past and future with parents at younger ages predict children's independent narrative skills at the beginning of school (also see McCabe & Peterson, 1991; Peterson & McCabe, 1992). Overall, children who experience rich parental input in the early home environment have larger vocabularies and greater syntactic and narrative skills than other children. Since these oral language skills provide the later foundation for reading comprehension, these children are better equipped for challenges of reading comprehension. In addition to quantity and quality of the speech directed to children, the kinds of activities parents engage with their children have implications for later literacy. Studies based on parental questionnaires indicate that the frequency of parent-child book-reading interactions predict later reading skills (Bus & van Ijzendoorn, 1988). Ongoing

research by Demir and colleagues examining naturalistic parent-child book-reading interactions suggests that (Demir, Applebaum, Levine & Goldin-Meadow, in preparation) parents' extensions of the topic of the book, discussions of the pictures in the book and reading the text of the book predict children's reading comprehension skills at the end of 1st grade.

The findings cited above suggest that parents can tailor their child's vocabulary development and critical thinking skills to prepare for the school environments by engaging in frequent conversations in academic English. Parents may also use complex sentences, narrative structures and diverse vocabulary. From the standpoint of the early reading teacher, these vast oral language differences among children may not seem important because early reading instruction conventionally focuses on decoding familiar text. However, these differences in children's oral language skills emerge as crucial when children have mastered basic decoding and the focus shifts to reading comprehension around grades two to three. This reasoning implies that early educators should emphasize oral proficiency in academic English and thereby prepare children for the transition to read unfamiliar text with high levels of comprehension; and that the aim of preparing all children to read with high levels of comprehension by third grade can be achieved only if caregivers attend to differences in oral language and emergent literacy skills much earlier. Moreover, the appropriate mix of instructional strategies will vary by child as a function of linguistic background. Such a project thus requires frequent, detailed, objective assessments of children's language and literacy skills to insure developmentally appropriate instructional interventions from ages three to eight.

English Language Learners

Assessments for Young English Language Learners

The populations that reflect the low end of the achievement gap, specifically low SES and ELL students, are our major consideration for this project. A key component of the project, therefore, is to consider the opportunities and challenges of developing such assessments for young English Language Learners. This section describes how ELLs are defined and represented in the public school system and the current debate on how to best meet their needs in testing and assessment development.

Increased Diversity in the Classroom

There are approximately 14 million students in U.S. schools (K-12) who speak a language other than the majority English language at home (August & Shanahan, 2006). These children are referred to as language minority (LM) learners, whether they are proficient in the native and English languages, dominant in English, or have limited English proficiency. A subset of LM learners who are not fully fluent in English and cannot gain full access to mainstream instruction without additional supports are designated English language learners (ELLs) (LEP; August & Shanahan, 2006). The label ELL is time-varying and meant to be temporary as the goal is for these children to be reclassified as English proficient (see Kieffer, 2008).

ELLs represent the fastest growing student population in the U.S. (NCELA, 2008). ELL school enrollment has grown dramatically during recent decades: from 1998 to 2008, ELL enrollment grew over 50 percent, whereas enrollment for the total student population grew under 9 percent (NCELA, 2008). Although distributed across all grade levels, ELLs are principally concentrated in the early elementary grades, with over 44% in pre-K through 3rd grade alone (Kindler, 2002). Moreover, these learners disproportionately live in poverty (Fry & Gonzales, 2008) and are typically enrolled in high poverty, low-performing schools (Gandara, Rumberger, Maxwell-Jolly & Callahan, 2003). Within the ELL group, the largest and fastest growing are students who immigrated before kindergarten and U.S.-born children of immigrants (Capps, et al., 2005). Of the over 460 languages ELLs represent, Spanish is the most frequently spoken language (Kindler, 2002).

The large numbers of ELLs in U.S. schools and their fast growth rate is significant in light of their poor English language and literacy outcomes, especially evident in later grades (August & Shanahan, 2006). In particular, ELLs demonstrate remarkably low proficiency levels in reading comprehension, which as noted in the section above is the skill that matters most for academic success (National Early Literacy Panel, 2008; Snow, Burns & Griffin, 1998). A recent report of the National Assessment of Educational Progress (NAEP) showed that of 4th grade ELLs in the U.S, only 6% score at or above proficient in reading comprehension (NCES, 2009). By 8th grade, only 3% of ELLs score at or above proficient. Moreover, ELLs drop out of school at rates twice as high as their monolingual English-speaking (EO) peers (Ruiz de Velasco & Fix, 2000).

LM Learners: The Developmental Process for Reading

In comparison to EO children, who have been the focus of the great majority of reading research, there are relatively fewer studies on the developmental process of reading in LM learners (see Lesaux & Geva in August & Shanahan, 2006 for a review). Parallel to the study findings cited above with EO children, available research on LM learners has shown decoding and oral language skills to be associated with reading comprehension for this population (Mancilla & Lesaux, in press; Nakamoto, Lindsey, & Manis, 2008; Proctor, Carlo, August, & Snow, 2005; Proctor, August, Carlo, & Snow, 2006). Moreover, empirical studies with LM learners across grade levels reveal cross-linguistic influences between first language (“L1”) and second language (“L2”) reading skills. For example, one cross-linguistic study with Spanish-English bilingual children in Head Start programs showed a bidirectional relationship between L1 and L2 phonological awareness (Dickinson, McCabe, Clark-Chiarelli, & Wolf, 2004). Another study with Spanish-English bilingual first graders revealed that L2 word reading (words and non-words) was positively related to L1 phonological awareness and word recognition (Durgunoglu, Nagy, and Hancin-Bhatt, 1993). More globally, L2 reading development has been shown to proceed in ELLs with limited English oral proficiency if they have well-developed L1 skills in some domains such as writing and emergent literacy, thereby showing the facilitative influence of the L1 in L2 reading development (Lanuaze & Snow, 1989; Reese, Garnier, Gallimore, & Goldenberg, 2000).

Despite adequate word readings skills, however, LM learners consistently underperform their EO counterparts on measures of reading comprehension at the later grades when comprehension is heavily dependent on linguistic knowledge (Kieffer, 2008; Proctor et al., 2005). In fact, the poor performance on measures of linguistic knowledge among LM learners is exhibited early on and continues through middle school. For example, studies have shown that LM learners, on average, score about two standard deviations below the national norm on vocabulary knowledge in preschool (Hammer, Davison, Lawrence & Miccio, 2009; Pérez, Tabors, Lopez, 2007) and by middle school, they stay roughly one standard deviation below the national norm.

Instructing and Creating Assessments for ELLs

The overall low skill level among LM learners and the differences in the ultimate skill level between these children and their EO counterparts indicates that LM learners require targeted oral language instruction, highlighting the importance of early on-going assessments that guide instruction. The heterogeneity of the fast growing ELL population has implications for the types of instructional practices and assessment strategies implemented in schools (see Espinosa, 2005). For example, ELLs vary in terms of the home language they speak and their language proficiency and fluency. They also vary in the amount and context of their language exposure (Genesee, 2006). As is the case for all children in the process of learning more than one language—language minority and language majority alike—some ELLs may have acquired their languages sequentially, that is, after establishing their native language, or in a simultaneous manner (e.g, Bilingual First and Second Language Acquisition; McLaughlin, 1978). Consideration should be given to these factors when determining the appropriate strategy for instructing and assessing ELLs.

As noted by Genesee (1999), the approaches one takes in instructing this diverse group of children depends on one's ultimate goals for this population. The differences in the available instructional program models lie in whether the goal is for functional bilingualism and academic achievement or the ultimate learning and achievement in English. Whereas some children are immersed in English-only classrooms, others receive some form of native language support. The great majority of research focusing on ELLs has been motivated by a political and ideological debate over whether early instruction should be in the native language or in English. Leaving this debate aside, empirical research suggests that ELLs are more successful in programs that are specifically designed to meet their needs (e.g., bilingual, ESL) rather than when placed in mainstream English classrooms (Genesee, Lindholm-Leary, Saunders, & Christian, 2006).

Likewise, in order to support learning, well-planned and effective assessments that are sensitive to children's diverse needs can guide teaching. Indeed, all children, including ELLs, have the right to experience high quality assessments that meet their diverse needs (National Association for the Education of Young Children, 2005). Yet there is a dearth of adequate assessment instruments that take into account the linguistically-diverse needs of ELL students and a lack of empirical work designed to evaluate the effectiveness of assessments in promoting their learning. Designing and implementing effective

assessment strategies presents a set of challenges given the central role played by language for ELLs.

As detailed by Espinosa and Lopez (2007), the approaches used to compensate for ELLs' linguistic diversity range from total exclusion from testing to inclusion with or without modifications. Historically, ELLs have been underrepresented in large-scale assessments. However, due to standards-based legislation there has been increased attention to include all children in testing, including young ELLs. One approach is to initially administer assessments in the child's home language and then transition to English-only assessments, or to utilize a dual language approach in which the assessments are administered in both the home language and English at all time points. The dual language approach can either lead to separate scores for each language, or a conceptual score that reflects the number of concepts in both languages, in other words, the child's combined knowledge (see Pearson & Fernandez, 1994).

In creating and administering assessments in the child's home language, there are several important issues to consider. New and translated assessments are not only difficult, expensive to create, and time consuming (Abedi, 2004), they require the hiring of bilingual administrators who are familiar with the test-taker's culture (Espinosa, 2005). Issues of test bias and validity also arise. When the native language is not the language of instruction, students are unable to demonstrate content knowledge in the native language, in which case assessing children in their native language will presumably not lead to increased test performance (Abedi, Courtney, Mirocha, Leon, & Goldberg, 2005). It is increasingly argued that a well-rounded assessment of children's language experiences be made, especially the home language and beginning at the preschool level. Given the limited availability of native-language assessments, assessments of the children's language experiences are typically conducted informally by teachers or other school personnel (NRC, 2008). However, as noted by Espinosa (2005), effective assessments must include both formal and informal procedures; for example, observations and interviews.

Clearly, creating assessments for young ELLs presents its own challenges. Not only is language development at an early stage for L1 and L2, it is crucial to understand the cultural context in which children are being raised when testing their linguistic development. It is especially important that assessment is developed with personal and cultural experience in mind and not focused on cultural practices in the U.S. that young ELLs may not have been exposed to.

Although creating a valid, reliable and generalizable (e.g., across different dialects) Spanish assessment would permit the majority of ELLs to fully participate in testing and benefit from guided instruction, another common approach to ensure the participation of the entire population is to make modifications to the test that take into account the cultural and linguistic diversity of the ELL population. The aim of these accommodations is to remove sources of difficulty for ELLs without negatively impacting the intent of measurement, while still maintaining the test construct (see Wolf et al., 2008), and without giving ELLs an advantage over other students (Abedi, Hofstetter, & Lord, 2004).

To date, there has been little empirical evidence to support the use of particular accommodations over others (for a review see Francis, Rivera, Lesaux, Kieffer, Rivera, 2006), which explains the vast differences in accommodation-usage across states. Through an extensive analysis of the states' testing policies, Rivera, Collum, Shafer Willner, and Sia (2006) found that 75 different accommodations were being used with ELLs across 47 states and these fell into four broad categories: 1) timing and scheduling, 2) setting, 3) response, 4) presentation. The accommodations to timing and scheduling that are most relevant for the preschool age group are extending testing time over several days or increasing the allotted response time. An example of a modification of the setting is to have assessments administered by bilingual/ESL personnel who are familiar with the child in order to make the testing situation more comfortable for the child. Changes to the responses provided by children include, for example, allowing children to point to or indicate responses instead of giving an oral response, or giving a response in the native language that is recorded and translated (if the administrator does not speak the child's native language). Moreover, changes to the response that are often-cited as being effective in the early childhood classroom are the use of manipulatives, pictures, and illustrations (Valdez Pierce, 2003). Prevalent in the literature are changes to the assessment presentation, such as making linguistic modifications that reduce the complexity of the language presented in test directions. Using familiar/high-frequency and unambiguous words, simplified syntax (avoiding multiple clauses), and the present tense are recommendations by The Limited-English Proficient (LEP) Consortium of the Council of Chief State School Officers (CCSSO)/State Collaborative on Assessment and Student Standards (SCASS). Other changes to the presentation are to provide further explanations of directions or reading them in the child's native language, perhaps by using an audio recording (see Wolf et al., 2008 for other examples).

Our approach to assessment development is in line with the concept of Universal Design (Center for Universal Design, 1977; Thompson, Johnstone & Thurlow, 2002) in that we are designing our assessments to be accessible to *all* students, thus reducing the need for accommodations. Indeed, our assessments include the elements of universally designed assessments. For example, paying special attention to the quality of the items, our assessments will consist only of accessible, non-biased items. To do so, we will check the items for clarity and lack of ambiguity as well as ensure that they are sensitive to cultural norms. By not adhering to the common practice of excluding particular subgroups from our pilot testing, we will be able to reduce any bias by reviewing item responses from subpopulations. In addition to establishing maximum comprehensibility as we noted previously, we will also use simple clear and intuitive instructions. Altogether, our overarching goal is to accurately reveal individual ELL students' language and literacy skills.

Domains to Assess in Young ELL and non-ELL Children:

As is evident from the discussions above on the developmental reading process for all children, including ELL children, foundational oral language skills carry immense

importance for later reading comprehension. Assessments aiming to provide a clear picture of whether preschool children are on track to become successful readers should include oral language measures. Thus, given the literature cited above on the foundations of children's reading comprehension, the key domains of assessment we are aiming to build through ages three to four are two-fold: emergent literacy skills and oral language skills. In terms of emergent literacy skills, we aim to assess the following skills: understanding of **graphemes** (naming letters of the alphabet), **phonological awareness** (manipulation of individual syllables or phonemes, e.g. saying bat without /b/), **phoneme-grapheme correspondence** (letter-sound knowledge, e.g. knowing b corresponds to /b/), **print concepts** (knowledge of print format, e.g. knowing that writing goes from left to right) and **beginning writing** (e.g. writing one's name). In terms of oral language skills, we are planning to assess children's **vocabulary production** (e.g. using rare words in spontaneous speech) and **receptive language comprehension** (e.g. pointing to the picture that corresponds to a given word out of an array), **syntax production and comprehension** (e.g. pointing to the picture that describes a given sentence out of an array), **narrative production** (e.g. retelling the story of a book or cartoon presented) and **listening comprehension** (e.g. answering inference questions about a story) and academic language use (e.g. using academic language features in spontaneous speech, giving explanations).

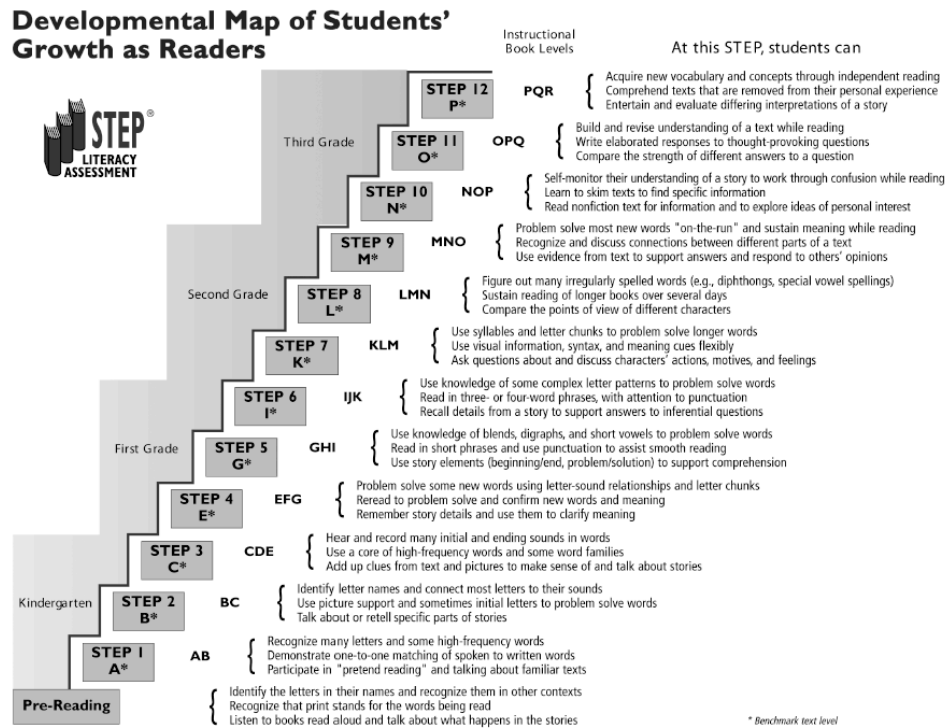
The Strategic Teaching and Evaluation of Progress (STEP) Our Literacy Assessment Tool for Pre-K to Third Grade

STEP For Kindergarten-Grade 3

STEP was created by studying multiple research based developmental trajectories of isolated literacy components and then combining these trajectories to create "steps" that provide a developmental map of how children learn to read. Within this developmental map, two approaches provide windows into evaluating how students are progressing. The first, the formal assessment, is individually administered and organized around a set of books. The second, the informal assessment, uses checklists as a lens for observing children's reading behaviors during literacy activities. Combining the formal and informal assessment provides teachers with a complete portrait of students' strengths and weaknesses. Together they serve as a powerful means to inform decisions about literacy instruction.

The STEP assessment, currently developed for K-3, is rooted in a set of leveled texts that increase in difficulty with each "Step." During individual conferences of 10 to 15 minutes, the teacher records students' reading accuracy and fluency, observes their reading behaviors, and engages students in conversations that gauge their comprehension. Importantly, however, the assessment at each Step, in conjunction with the leveled books, provides a deeper look into specific skills that supplement what is learned from students' oral reading. In this way, STEP explicitly joins the reading of authentic texts with assessments of letter-sound association, phonological awareness, and word knowledge -- providing a complete window into the integrated development of the reading process

from kindergarten through third grade (Kerbow, 2006). Figure 1 displays the logic of STEP.



The skills that students can complete at each of the 13 steps are displayed in the brackets on the right side of Figure 1. The capital letters A through R in the middle of the Figure represent the instructional levels of books that are used for each assessment. For example, when a teacher administers a Step 3 assessment, she will select a book that is at an instructional level C. Instructionally she may choose a book from level C, D, or E, depending on the assessment results. The grade levels that are expected to align with different step levels are listed at the far left of the figure. Reading the figure below left to right, we can see that students in kindergarten are expected to progress through Step 1 and Step 3 and read instructional books at levels A,B,C,D and E, while third graders are expected to progress through STEP levels 10 and 12 on the Step assessment and read instructional books at levels N,O,P,Q and R.

At each step, students demonstrate mastery of a particular set of skills. Students at step 2, for example, identify letter names, connect most letters to their sounds, use pictures and the first letter in a word to help them problem-solve while they read and retell specific parts of stories. Students at later stages in the step trajectory, for example at step 10, monitor their own thinking to work through any confusion they experience as they read. They also learn to skim texts to find specific information, as well as read non-fiction text for information and to explore ideas of personal interest. After students complete all

thirteen steps in the STEP assessment, they are considered to be reading at high levels of comprehension. A key task of our current project is to extend STEP “downward” to include children ages 3-4. Together with the current STEP, we will then have a coherent system for the development of literacy skills over ages 3-8.

Impact

STEP’s usefulness to teachers and to their instructional practice is one of its strongest attributes. From its creation in the late 90’s, STEP’s sole purpose was to help teachers determine what they should be teaching during the literacy block in order to support and accelerate student reading progress.

STEP empowers teachers to learn, understand, and internalize explicit and specific indicators for each reading developmental stage thereby equipping practitioners with the skills necessary to analyze data and determine best instructional next steps. Specifically, STEP provides descriptive details at various levels, and strategies readers demonstrate across developmental phases of reading. Therefore, STEP’s developmental approach to reading assessment further deepens teachers’ understanding of literacy development and forms an integrated understanding of the components and processes of learning to read.

STEP supports the translation of assessment data into instructional implications in three key ways. First by providing support in the form of a literacy expert to analyze the data and develop an instructional action plan with the teacher, thus growing the teacher’s knowledge and expertise. The second form of support is through the written materials that describe the necessary skills for students to acquire at each STEP level and the detailed descriptions of reading stages and behaviors. The third way that STEP supports the translation of assessment data to instruction is through the common language, practices, and expectations that the assessment requires teachers to adhere to in order to administer the assessment with fidelity. A successful implementation leaves a school with knowledgeable reading teachers, common language and practice for teaching reading, and high expectations that lead to high reading achievement.

Furthermore, STEP provides a framework for teachers to engage students in conversations about a text that are geared not only at evaluating, but also stimulating and strengthening students' emerging capacities for comprehending and expressing complex ideas.

In this model of literacy instruction, each teacher collects detailed evidence every eight to ten weeks to pinpoint each child’s strengths and needs. At each time point, a teacher may assess students at more than one step level, sometimes two to three step levels, depending upon their progress from the previous time point. Because they have information about a student’s skills across several step levels, teachers are able to compare a full range of data from one time point to the next, including results from earlier assessments. Teachers now have ample information to make reliable judgments about each child’s development as a reader.

By the end of third grade, all students should be at “STEP 12,” the final step in the assessment, signifying that they are reading with high levels of comprehension and are ready to “read to learn.” This is the kind of reading they will encounter as they move into subject-area instruction in middle school and beyond. Having a goal for the end of third grade (STEP 12) allows us to look backwards and determine appropriate end-of-year benchmarks for kindergarten through third grade as well. All of the teachers in schools using STEP understand the components of the STEP assessment in detail and know which children throughout the school are at which STEP. Indeed, the children’s parents and the children themselves know which STEP they are on and what efforts are required to get to the next level.

Administering the Assessment

The STEP manual, and the training schools receive, provide schools with written guidelines for how to administer and score the assessment, and although following these guidelines is essential, it is just as important for all school faculty to discuss how they administer and interpret the assessment—for only through discussion will schools establish reliability and be able to translate that reliability into the instructional emphases that might follow. STEP provides explicit articulation of bottom lines supplemented by multiple student work examples that “objectify” teacher assessment of student skills as much as possible—constructing rich descriptive portraits of what to look for and how to match and level texts that are appropriate for each student in order to differentiate instruction.

A STEP trainer is assigned to every new school user in order to support fidelity of implementation and to assure schools are realizing the full potential of the assessment. Following every assessment window the STEP trainer facilitates the STEP data analysis grade level meetings for two purposes. The first purpose is to make sure appropriate instructional implications are being revealed from the data. The second purpose is to identify gaps in teachers’ knowledge in terms of teaching reading, and help fill them in so teachers are able to turn the appropriate instructional implications into actual effective instruction. Teachers leave these meetings with instructional action plans that guide their differentiated STEP based reading instruction for six-eight weeks.

Accessibility and transparency around assessment data amongst teachers and students clearly communicate where the students are, what they need to be tested on, and what they should be working on. Knowing where they are and how they are moving across steps become incredibly motivating for students. STEP implementation and use facilitates the development of a common language and set of practices for problem-solving. Common language and common understanding of standards are shared consistently across teachers, across grades and throughout the school.

Validation

The STEP assessment has been quite rigorously validated. An extensive study of STEP and its subscales using item response theory was conducted by David Kerbow and Anthony Bryk in 2005. They estimated the difficulty of each item and compared these difficulties with those hypothesized by developmental theory. The item responses

associated with each STEP tended to strongly reflect the hierarchical theory regarding how each early component of reading skill lays the basis for later components. The analysis identified items that did not fit the theory, leading to some revisions of the instrument. The analysis also produced estimates of the reliability of each scale, and each reliability (internal consistency) exceeded .75. Concurrent validity analyses showed moderately high correlations with available reading scales that are used in summative but not formative evaluations. The authors found substantial levels of predictive validity for the subscales. Importantly, all of the items taken together formed a developmental scale with reliability of .94.

Kerbow and Bryk's 2005 report showed that students who successfully achieve the benchmarks of STEP 9 by the end of second grade and STEP 12 by the end of third grade are substantially more likely than other children to perform at or above grade level on external standardized assessments in reading. More specifically, over 80% of second and third grade students in Chicago Public Schools who were at their STEP benchmark scored at or above the 50th percentile on the Iowa Test of Basic Skills, and 86% of third graders met or exceeded state standards on the ISAT. Additionally, every single second grader who had achieved beyond STEP 9 also scored at or above national norms.

In contrast, only half of third graders at STEP 11 achieved at grade level on the same assessments (54% ITBS, 50% ISAT). Students who were further behind STEP benchmarks were less likely to meet grade-level standards on these external reading assessments. Second graders who were behind STEP benchmarks saw similar results, with only 41% of students at STEP 11 scoring at or above norms on the ITBS. (See Table 1 for complete results.) These data provide strong support of the predictive validity of STEP's developmental benchmarking system and its ability to guide students to success on external standardized assessments. The validity results are also considered lower bound estimates, since the STEP assessment is administered under normal classroom conditions, which are much less controlled than those mandated for ITBS and ISAT administration.

In addition, while the Chicago Public Schools sample was limited (n=290, 81% African-American, 19% Latino, 85% eligible for free/reduced price lunch program), STEP is currently being used by some of the highest performing non-selective schools in the country, including Uncommon Schools, KIPP, Achievement First, New Schools for New Orleans, and University of Chicago Charter Schools. Teachers and administrators from these schools have all observed improvements in standardized test scores after implementing STEP in their schools. For example, Uncommon's North Star Elementary kindergarten class began the 2008-09 school year with a median national percentile of 27.5 on the TerraNova Reading Exam, and ended the school year with a median national percentile of 95.3. Diane Schanzenbach, an economist at Northwestern University's Institute for Policy Research, is conducting a rigorous, comparison between the children whose reading achievement has been based on STEP assessments in University of Chicago Charter Schools and a randomized comparison group made up of children whose families applied to these schools but did not win the lottery used to assign places to these schools.

Percentage of Students who scored at or above the 50 th percentile on ITBS by end-of-year step level							
Step level	6	7	8	9	10	11	12
2 nd Grade (n=167)	27%	37%	41%	82%	100%	100%	100%
3 rd Grade (n=123)	0%	0%	12%	17%	15%	54%	83%
Percentage of Students Meeting or Exceeding Standards on ISAT by end-of-year step level							
3 rd Grade (n=123)	0%	0%	12%	15%	25%	50%	86%

Step 9 is the level benchmark for second grade, Step 12 is the level benchmark for third grade

Creating a New Literacy Assessment Tool for Children Ages Three and Four

Connection to Standards

We are well aware of the importance of linking assessment to established national standards. The pre-K through third grade STEP assessment, for example, closely aligns with the new Common Core Standards (CCS) for English/Language Arts. In developing a literacy assessment for 3 and 4 year olds, we are cognizant that there is not yet a strong consensus around standards for this age group. We aim for assessments linked to standards and not tied to any particular curriculum. The question for us is whether children are meeting standards at any time; equally importantly, whether they are on track to meet standards in future grades; and finally, whether the evidence revealed through the assessments enables teachers to effectively tailor their instruction to the current mix of skills of each student so that every child can meet the standards. Our unique ability to join research and practice enables us to achieve these goals as we continue to review and assess the current climate around standards and how they link to assessments for this age group.

Timeline

We are already in the process of developing new STEP levels for younger children in the domains of emergent literacy and oral language skills, the two key domains identified above, as the chart in Appendix A demonstrates.

This chart combines our current STEP assessment and merges in a new assessment to include five additional STEPs prior to Pre-Reading that can be used to assess preschool literacy development. We also include new assessment domains in our current Pre-Reading STEP level that link preschool to elementary school. The band of check marks under Pre-1 through Pre-5 represents our anticipated new STEP levels. The checks within squares under our Pre-Reading STEP level represent our anticipated additions to our existing Pre-Reading assessment.

By early March, 2011 we will create a draft assessment protocol. Items for this draft will be based on research literature, existing assessments, experience with our STEP tool, and research results from the university's large database on early language development coming out of the Longitudinal Language Development Project. As part of the item and assessment development we will explore pre-K literacy standards which have been put forth by organizations such as the National Association for the Education of Young Children (NAECY), and test these standards against the assessments we develop.

We will pilot this protocol in our charter schools as well as four other Chicago Public School preschools between February and May of 2011. We will revise the protocol in the summer of 2011 and field test it between September 2011 and May 2012. We will disseminate the results the following year through a technical report, conference, research reports, and a training manual.

We are convinced that the foundation for literacy success for all children, and especially for low-SES and ELL children, is linked to frequent, detailed, individualized assessments of progress in the domains that lead to high levels of reading comprehension, beginning at age 3. The assessments we develop will be instructionally relevant in that we will ensure that teachers can administer and use the assessment in the normal course of their work. Furthermore, through piloting and field tests we will document the potential of the assessments to improve practice. We view such assessments as the backbone of school-wide efforts to insure that all students are on track for academic success. The assessment system we propose can guide evaluation research on the effectiveness of new pre-K educational programs while also supporting systematic, school-wide instructional practice.

Developmental spelling							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reading Record (by text level)						A	B	C	E	G	I	K	L	M	N	O	P	
Reading Rate/Fluency									✓	✓	✓	✓	✓	✓	✓	✓	✓	
Reading Comprehension																		
Oral Questions						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Story Retelling													✓	✓	✓	✓	✓	
Written Questions													✓	✓	✓	✓	✓	

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