Texts And English Language Learners: Scaffolding Entrée To Reading

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Hop! Hop! Hop!
Hop, hop, hop on the bed.
"Stop! Stop! Stop!" said Dad.
"Not on the bed."
Hop, hop, hop in the bath.
"Stop! Stop! Stop!" said Dad.
"Not in the bath."
           Excerpt from a first-grade reading text (Bick, 2000)

When presented with this text in November of first grade, Benito, a native-Spanish speaker learning to read in English, read the text as "Harry Potter, Harry Potter." The first Harry Potter movie had arrived in theaters over the weekend and that morning's classroom sharing time had been devoted to a discussion of the film. Benito was using background knowledge to give meaning to the text and his excitement was inescapable. However, this particular knowledge and his excitement did not help him read "Hop! Hop! Hop!" Like many first-graders, especially those who enter school speaking languages other than English, Benito faces a severe challenge in achieving literacy levels required for full participation in the economic and civic communities of the 21st century (Donahue, Finnegan, Lutkus, Allen, & Campbell, 2001).

In a study of first graders (Hiebert & Fisher, 2002), 40% of the sample, including Benito and most of his English-language-learning (ELL) peers, did not recognize any high-frequency words in November. If first-grade reading levels predict fourth-grade reading levels and these, in turn, predict high school reading levels (Juel, 1988), Benito has a high probability of being

among the 40% of American fourth-graders who fail to attain the basic reading level on the National Assessment of Educational Progress (NAEP) (Donahue et al., 2001).

Increasingly, large states have relied on textbook programs as the primary intervention for this sizable group of students who are not attaining national standards. However, policies about beginning reading textbooks have outdistanced theoretical and empirical scholarship. The policies of the nation's two largest state-wide textbook adopters, Texas and California, have moved in a relatively short time from one end of the philosophical spectrum to the other end. In moving from almost exclusive use of literature-based texts to almost exclusive use of decodable texts, an array of other important text features has been ignored.

Recent studies suggest that failure to attend to features like word repetition rates and the rate at which new words are introduced has made beginning texts accessible only to those first-graders who can already read well when they enter grade one (Foorman, Francis, Davidson, Harm, & Griffin, 2002; Hiebert, 2001a). For children who are learning to read from these texts at the same time as they are learning to speak and comprehend English, current texts are nothing short of formidable.

The lack of theoretical and empirical foundations for both the design of reading texts and state-wide adoption guidelines for textbooks highlights the need for knowledge about the impact of text features on the development of beginning readers. In this chapter, we present a framework for text features and apply it to the design of beginning reading textbooks for English language learners. First we describe the features of current beginning reading texts. Next, we review existing research on text features that support language and literacy learning of ELLs. Finally, we describe the features of a set of beginning reading texts that were designed for ELLs.

Several observations will give readers a broader context for these texts as well as our model of text and its role in reading development. The texts that will be presented in this chapter are only part of the entire Network for English Acquisition and Reading Star (NEARStar) program. This multi-media, Internet-based program includes other forms of texts such as chants and take-home books as well as virtual trips to worlds where concepts are enriched. Further, these texts are a supplementary rather than a primary reading program. Within the broader primary reading program, teachers read aloud texts with rich literary language (Hiebert & Raphael, 1998). Texts that children read along with teacher or peers are also critical and likely have different characteristics than the texts of independent reading or teacher read-alouds (Hiebert & Raphael, 1998).

While a reading program includes many kinds of texts, texts for independent reading cannot be given short shrift as has been the case in recent decades. A sizable group of children does learn to read with the texts of read-alouds and read-alongs. By November of first grade, about 30% of Benito's first-grade cohort had independent reading levels that permitted reading of almost any first-grade text (Hiebert & Fisher, 2002). Another 30% struggled with some words in a text such as *Hop, hop, hop* but were on a trajectory to end the year with sufficient reading skills to make the grade. It is for children such as Benito—the 40% who do not attain basic level on the NAEP, a group in which ELLs are more likely to appear—that the design of texts matters.

Current Beginning Reading Texts And English Language Learners

Publishers provide teachers with three types of texts for the instruction of beginning readers: (a) the anthologies of large textbook programs, (b) decodable texts, and (c) little books that are shorter versions of the anthologies. While all three types of texts are now offered as part of large textbook programs, the anthologies are the core component and the little books and

decodable books are ancillary components. Samples of each text type from a prominent program

are provided in columns 1 through 3 of Table 1.

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Insert Tables 1 & 2 about here

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Table 2 presents comparisons of selected text features for a variety of texts. The texts are

grouped in four categories: 2000-2001 anthologies, little books, historical anthologies, and the

NEARStar program. Each row in Table 2 represents an analysis of 10 consecutive texts drawn

from the first instructional unit for grade one. Data in the 2000-2001 category describe the

anthologies of the five programs adopted for statewide use by Texas in 2000 (Adams et al., 2000;

Afflerbach et al., 2000; Farr et al., 2001; Flood et al., 2001; Scholastic, 2000) and a sixth

anthology that was not submitted in Texas (Cooper et al., 2001). These data were reported by

Hiebert (2001a,b) as part of a study comparing the texts adopted in 2000 (labeled Study 1A in

Table 2) with three prior copyrights of Scott Foresman (1962, Robinson et al., 1962; 1983,

Aaron et al., 1983; and 1993, Allington et al., 1993). Data on these three historical Scott

Foresman programs are labeled Study 1B in Table 2.

Table 2 also includes descriptive data on little books (labeled Study 2 in Table 2). The

little books category includes two decodable book programs (Open Court, Adams et al., 2000;

and the phonics readers from the Harcourt Reading Program, Farr et al., 2001) and three popular

little book programs (Rigby PM Plus, Rigby Education, 2000; the Sunshine books, Wright

Group, 1996; and the Waterford Early Reading Program, Waterford Institute, 2000).

The number of different words introduced in a text is one factor that influences a text's

accessibility for beginning readers. For nine of the 11 current programs that are summarized in

Table 2, the number of new words introduced per 100 words is within a handful of the mean (22 words). These nine programs show a similar distribution for word repetition. An average of 41% of the unique words occur once and 35% of the unique words appear four times or more. The patterns for Houghton Mifflin's 2000 program (where 66% of the unique words occur once) and for the Rigby PM Plus texts (where 68% of the unique words appear four times or more) vary considerably from the group average and from one another.

The historical analysis showed that between 1962 and 1993, the number of unique words and their pace of introduction increased substantially, while the amount of word repetition was curtailed. Prior to 1993, unique words per 100 counts were 10 or lower and each unique word was repeated from 10 to 20 times in the first instructional unit of grade one. When programs became "literature-based" in the 1993 copyright, word repetitions fell to 3 per word and new, unique words were introduced at the rate of 23 per text. While the Texas-approved texts in 2000 had substantially higher percentages of decodable words compared with 1993, the average number of repetitions and the pace of introducing new words remained at 1993 levels.

The task for entering American first graders in the first decade of the 21st century requires that they sustain a theme across an 83-word text—the average length of the current 11 programs listed in Table 2. The typical 83-word text will have 18 new unique words (21 unique words per 100) of which almost 8 will appear once in the instructional unit. Distributions of words will also vary in terms of frequency, interest, and phonetic regularity depending on the programs that teachers and districts have selected. In some schools, many of the words may be phonetically regular, while in others, many words may be multisyllabic.

The obvious questions to ask about these data are: (a) have entry reading levels of American first graders changed from the early 1980s to make this shift in task a reasonable one?

and (b) Even if children's entry levels have not changed, do the new task demands reflect beginning first graders' learning rates?

In response to the first question, no wide-scale summaries of the profiles of entering first-grade cohorts exist. Systematic data sets for American grade-level cohorts begin with fourth grade (Donahue et al., 2001) but two studies provide insight into the distributions of a current first-grade cohort. In the first study, Hiebert, Liu, Levin, Huxley, and Chung (1995) assessed a group of 100 exiting first graders from a representative group of American schools. These students had been taught with literature-based programs (similar to the 1993 copyright in Table 1) as well as little book programs. At the end of grade one, 45 recognized an average of 8 high-frequency words; 23 recognized 25 words, and 32 recognized 57 words from a 60-word list.

The second study was the one in which Benito participated (Hiebert & Fisher, 2002). Assessments were conducted at the end of the first trimester of first grade, the point when the texts in Table 1 should be completed. On a high-frequency word task, 40% of the children failed to recognize any words. The remaining 60% was divided into four quartile groups with the following mean levels of high-frequency word recognition: quartile 1: 70 (of 80 words), quartile 2: 41, quartile 3: 21, and quartile 4: 10.

Based on the figures in Table 2, the first instructional unit of 10 texts will have, on average, at least 32 high-frequency words[1]. The children in the top two quartiles (30%) of Hiebert and Fisher's (2002) sample were fluent with these words. Another 15% (3rd quartile) was fluent with a sizable number of these words. However, for at least 55% of the first-grade cohort in this study (the 40% who read no high-frequency words and the 15% who recognized an

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[1] Based on 10, 83-word texts where 18 words are unique and where 18% of these 18 words are high-frequency words.

average of 10 high-frequency words), the mismatch between the demands of the texts and their rates of reading acquisition was substantial. Seventy-five percent of the ELLs in the sample were in this latter group.

Text Features That Support English Language Learners' Reading Acquisition:

Theory & Research

In previous papers (Hiebert, Martin, & Menon, in press; Hiebert, 2001a), the Text Elements by Task (TExT) model has been presented as a means for understanding proficiencies required to read beginning reading texts. The TExT model[2] postulates two critical constructs in determining beginning readers' success with texts: (a) linguistic content (for example, types of words) and (b) cognitive load (for example, number of different words and number of repetitions per word). Little, if any, of the existing research on the influence of text features on beginning reading development has been conducted with ELLs. In this context, we highlight issues related to text design that may be considered especially suited to the needs of ELLs.

Linguistic content

The critical linguistic knowledge for recognizing words is evident in three types of words: (a) words that are easy to image and remember because of children's knowledge of, and interest in, the underlying concept, (b) phonetically regular words, and (c) words that occur frequently and often contain irregular letter-sound correspondences. All three groups of words can be changed by adding morphemes (i.e., inflected endings and comparative suffixes). This review focuses on the earliest stages of reading acquisition when morphological changes, such as plurals, possessives, and inflected endings are infrequent.

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[2] Readers who are interested in in-depth reviews of the literature that underlie this model are encouraged to explore the references.

High-interest words. We have chosen the label "high-interest" words to describe words with high meaning, imagery, and concreteness values. Within research on word imagery (Paivio, Yuille, & Madigan, 1968), words such as *democracy* and *stigma* are defined as highly meaningful. What distinguishes *democracy* from *Daddy*, *Mommy*, or *truck*s is imagery value and concreteness. Some high-meaning words such as *democracy* and *stigma* have neither high imagery value nor concreteness. Words that are highly imagable and concrete, however, are always meaningful (Paivio et al., 1968).

Typical first words in children's speech production (for example, *Mommy, Daddy, juice,* and *cookie*; Brown, 1973) fall into this category of high-interest words. It is some time before children's speech production includes the inactive verbs and articles that occur with high frequency in written text (Brown, 1973). Similarly, the first words that young readers recognize are often names of siblings, favorite toys, and events (Hiebert, 1983). In one study, 98% of the words that preschoolers nominated as the word-of-the-day were nouns (Hiebert, 1983).

A word's concreteness and imagery have also been found to influence the speed with which children learn to read these words in school settings. When words that were matched for length and frequency but differed in imagery and concreteness values were presented to kindergartners, Hargis and Gickling (1979) found that the concrete, high-imagery words were learned and retained better than words that were low in these characteristics. In a second study (Hargis, Terhaar-Yonkers, Williams, & Reed, 1988) in which the decodability of words was manipulated along with concreteness and imagery value, high-imagery, decodable words were learned more quickly than other groups of words, including high-imagery, less decodable words. Similarly, Laing and Hulme (1999) found that preschoolers learned highly imagable words more quickly than words with low imagery values.

Despite such findings, high-interest words were used sparingly in the textbooks of American beginning reading instruction for much of the 20th century. The Dick and Jane readers that served as the prototype for beginning reading texts from the 1930's through 1980's were filled with stories of high-interest events to young children such as playing with friends and pets. However, these high-interest concepts were typically communicated with abstract, low-imagery words. In a story in which Dick, Jane, Tom, and Pete use their shadows to create different characters, characters were described as "big" and "funny" rather than as cowboy, football player, or even shadow (Robinson, Monroe, & Bartley, 1962, pp. 59-64).

With the shift to literature-based reading programs, publishers turned to texts for beginning readers with predictable text and sentence structures such as Bill Martin's *Brown bear, brown bear*, (1967). These texts often use an enumerative text structure where the members of a category such as colors or animals (or a combination of the two as in brown bear or green frog) are introduced serially. While the same category could be the focus of different texts, publishers have typically chosen texts for anthologies or created little books where each text enumerates a different set of categories. For example, the other little books of the Sunshine level from which the third text in Table 1 is taken, develop categories such as colors of icing on birthday cakes and meals that a monster might eat, not forms of water transportation. This enumeration of items from different categories accounts, in large part, for the high percentages of single-occurrence multisyllabic words in Table 2.

The few studies that have been conducted on children's learning of words in predicable texts show that most first graders learn few of these words. In a study of children's repeated reading of three predictable texts over one month, Johnston (2000) reported that the highest-achieving readers retained 19% of the 160 unique words introduced in three predictable books,

while low-achieving readers retained 4%. The words that the low-achieving readers are not learning include the high-frequency words that appear often but may go unnoticed as teachers and students work on the meaning of the many high-interest words.

For children who are juggling the demands of a new language and learning to read and write, the use of English words that represent concrete, familiar concepts in their lives (i.e., food, family members, classroom objects) makes good sense. Words such as *helicopter* and *blimp* (see Table 1) make less sense for ELL students. When large numbers of words that represent unusual concepts appear in beginning reading texts without repetition, such words can be an obstacle for beginning readers in attending to common, consistent patterns in phonetically regular words and high-frequency words. An emphasis on a handful of familiar yet compelling categories across a set of texts seems preferable to different categories of items in every text.

High-frequency words. Rapid recognition of high frequency words such as *here* and *there* is an essential early step in learning to read and write. In conversation we use gestures or even objects to convey meaning. In texts, the full meaning cannot be gleaned until these high frequency words are added. Consider, for example, the difference in meaning of these sentences: "The book is on the table." "Is the book on the table?" "The book is about a table." The high-frequency words in these sentences provide the clarification that allows for comprehension.

High-frequency words can be particularly difficult for ELLs to hear and/or read. Many high-frequency words are not phonetically regular (e.g., *the, come*), they have meanings that are abstract (e.g. *the*) and ambiguous (e.g. *can*), and they can be homophones (e.g. *be*, *bee*). In addition, some have similar graphic features that make them very difficult to distinguish for beginning readers (e.g. *the, then, them, when*).

The haphazard presentation of high-frequency words that is the *modus operandi* of current texts (whether anthologies, little books, or decodable books), has not increased first-graders' performances on high-frequency word recognition tasks (Hiebert et al., 1995; Hiebert & Fisher, 2002). Furthermore, replacing high-interest words with high-frequency words, a common strategy in beginning reading textbooks of the 1960's through the 1980's, is also likely to be ineffective with ELLs. In oral language programs for ELLs, the meaning of high-frequency words receives substantial attention. Children might be told to "Pick the book up. Put the book down." A similar strategy has not been prominent in beginning reading texts, even though authors of trade books such as *Dog in, Cat out* (Rubinstein, 1993) show that playful texts can be created around the concepts represented by at least some high-frequency words.

Phonetically regular words. While English has many variations in letter-sound correspondences, English writing is alphabetic. That is, letters--not pictures or other symbols--consistently represent sounds. Children need to become facile in matching letters and sounds early on, if they are to become successful readers of English (National Reading Panel (NRP), 2000). The matching of letters and sounds in identifying unfamiliar words depends on learners' ability to distinguish and manipulate the sounds of English, a skill called phonemic awareness. Phonemic awareness is closely aligned to phonics instruction (NRP, 2000). The NRP concluded that the most effective phonemic awareness instruction engages children with letters and their associated sounds. Well-designed phonemic awareness and phonics instruction becomes particularly critical for ELLs. Developing useful programs for ELLs is complicated by the fact that some phonemes in English may not exist in the learner's native language. In some cases, there may be direct conflicts between the sound associated with a particular letter in English compared to the sound associated with that letter in the learner's native language. When there is

a variety of languages in a classroom, these conflicts can be extremely complex. Further, while most native English speakers enter kindergarten with at least a modicum of letter-name knowledge such as facility with the alphabet song, the written language knowledge of ELLs may pertain to a different alphabet or representation system. Although there is an extensive research base on phonemic awareness and phonics for English speakers, studies of phonemic awareness or phonics knowledge among ELLs are scarce. However, when existing research on native English speakers is examined from the perspective of ELLs, some guidelines for learning to read in English can be suggested.

Identifying unknown words requires children to associate letters with sounds very rapidly and this skill must be developed early in the process of reading acquisition. Since consonants frequently appear at the beginning of words, knowledge of consonants is a first step in a program that connects phonemic awareness with letter-sound matching activities. Among the 43 phonemes identified as essential for reading (Moats,1999), 21 graphemes account for the 25 phonemes associated with consonants, while 7 graphemes account for 18 vowel phonemes. A group of consonants that is particularly resilient occurs in the common words of early phonics programs—short vowel words. Treiman, Mullennix, Bijeljac-Babic, and Richmond-Welty (1995) report that initial consonants are pronounced similarly in 94% of words with simple vowel patterns and final consonants are pronounced the same in 92% of CVC words.

Children need to move rapidly from relying on initial and final consonants to the sequential decoding stage where they produce sounds for the letters in a word in order as in /c/ /a/ /t/ for the word *cat*. To apply this strategy, children need to be exposed to many words with one-to-one letter-sound correspondences for both vowels and consonants.

Unlike the high consistency in consonants, vowels have the same pronunciation in 62% of similarly spelled words (Treiman et al., 1995). When the vowel and the consonant(s) that follows it—the rime-–are taken into account, however, consistency increases to 80% in CVC words (Treiman et al., 1995). Wylie and Durrell (1970) reported that 272 rimes with stable vowel sounds are contained in 1,437 words, and that 37 of these stable rimes occur in 10 or more exemplars, for a total of 500 words. As children are exposed to rimes, their facility with this larger unit of English orthography and phonology becomes stronger. This process of moving to bigger and bigger chunks of language continues, as children move to the reading level that characterizes the end of first-grade and beginning of second-grade.

A strategic stance in emphasizing particular phonemes and rimes with ELLs is suggested by research on metacognition. Children who are learning to read in a second language have been found to be more attuned to different sounds in the second language than their peers who speak a single language (August, Calderon, & Carlo, 2000). As Vygotsky (1987) observed, learning to read and learning to speak a second language are similar to the learning of scientific concepts. In these "unspontaneous" learning contexts (Vygotsky, 1987, p. 180), learners can use the linguistic and conceptual meanings from their spontaneously learned native language to mediate the learning process. Emphasizing a focused set of consonants or rimes is justified by the greater metalinguistic awareness of second language learners. Further, Share (1995) has established the presence of a "self-teaching" stance among successful beginning readers. Children who have a "self teaching" strategy figure out unknown words by applying knowledge of already taught patterns. Such a self-teaching stance comes about when children are encouraged to generalize their knowledge rather than focus on memorizing or learning every word, letter, or phoneme.

Cognitive Load

Cognitive load refers to the amount of different linguistic information a text requires beginning readers to apply. For proficient adult readers, cognitive load becomes a factor only with an unfamiliar topic such as a passage on biophotonics poses for non-scientists. For children who are at the very earliest stages of reading, most written words are unfamiliar. They may recognize an idiosyncratic group of words such as their names but these are unlikely to appear in the first texts. In first text of Table 1 (column 1), the title and the first line present five different words: *fish, mix, I, see,* and *one.* Only when children get to the sixth (*fish*) word do they see a word that they've encountered previously in that text.

Unlike adult readers whose cognitive processing is directed to understanding a handful of unfamiliar words or a unique perspective of an author, the cognitive processing of beginning readers is directed at the pronunciation of unknown written words. Once children figure out an unknown word, the assumption is that they know its meaning. In some cases, meanings of the words will not be immediate such as word *blimp* in the text in column three of Table 1. For ELLs who are attempting to pronounce words in a new language and connecting the label for the English word with the label of the concept in their native language, demands on cognitive processing are high. Hence, texts with words that represent familiar concepts are essential.

But to how many high-imagery words can children attend at particular developmental points? How many exemplars of words that share common and consistent letter-sound relationships are needed for children to recognize new words with those patterns? How often do children need to see irregular high-frequency words for these to become part of instantly recognized reading vocabularies? The research literature provides few answers to such questions. As the review of existing texts showed, the rate of introducing new words has

changed dramatically over the past decades. In the earlier model, there were three aspects of cognitive load that were considered: (a) pacing of new words, (b) repetition of these words in subsequent texts, and (c) the ratio of new words to total words in a text. The formula for cognitive load was summarized in a statement of the New Basic Reading Program of Scott, Foresman and Company (Gray, Monroe, Artley, & Arbuthnot, 1956) introducing the first preprimer: "each of the 17 words is used a minimum of twelve times in *New We Look And See*." (p. 48). Unfortunately, the research on which guidelines like these were based was conducted almost exclusively with high-frequency words (Gates & Russell, 1939).

Studies of cognitive loads imposed by texts have been infrequent. One exception is a study by Reitsma (1983) in which mid-year first graders and older, reading-disabled students read sentences with target words presented two, four, or six times. For the first graders, but not the reading disabled students, the optimal number of repetitions appeared to be four. However, Reitsma's study does not shed light on the number of repetitions required by children at the very earliest stages of reading. All of Reitsma's mid-first graders had received six months of reading instruction and were not designated as reading-disabled.

Despite a limited research base, the factors underscored by Gray et al. cannot be ignored: pacing, repetition, and ratio of new to total words. The uniform application of formulas such as that of Gray et al., however, did not take into account differences in the content of words. All linguistic knowledge is not equivalent in learning to read. Young children will typically learn high-interest words more quickly than they will learn high-frequency words. Further, words with consistent and common rimes do not require the same number of repetitions as words with less frequent rimes. Juel and Solso (1981) showed that exposure to words that share a rime such

as *man, can, van,* and *tan* rather than the repetition of a single word such as *ran* leads to application to new words with the same pattern.

Since data on the number of rimes or individual letter-sound correspondences that children can assimilate relative to high-frequency and high-imagery words have yet to be reported, we needed to make many choices about cognitive load in designing a beginning reading program for ELLs. As with other aspects of language learning, we assumed that beginning readers require at least some repetition of critical content and that the pace of assimilating new information requires attention as well.

Texts That Initiate ELL Students Into Reading: Application

Anderson, Hiebert, Scott, and Wilkinson (1985) described the task of writing engaging and theoretically sound texts for beginning readers as a delicate balancing act. As designers of the NEARStar texts, we found ourselves continually involved in balancing a series of complex trade-offs. On the one hand, we were intent on having texts that would engage children of the early 21st century whose worlds are full of radios, televisions, compact discs, and videos. On the other hand, we were equally intent on creating texts with critical linguistic information that did not overtax the cognitive capabilities of young children learning to read and write in a new language. The texts in the last three columns of Table 1 are examples of our attempts to produce both engaging and theoretically sound texts.

To bring ELLs to the level where they can participate in typical reading programs, we developed a three-level curriculum. Each level consists of 10 lessons and each lesson provides two texts and a take-home text. The three sample texts in Table 1 come from the middle lessons of each of the three curriculum levels. Features of the three levels are summarized in Table 2.

<u>Linguistic content of the texts</u>

The NEARStar texts were designed to focus on high-interest, high-frequency, and phonetically-regular words. But, even with phonetically regular and, to the degree possible, high-frequency words, the interest and familiarity of words for ELLs strongly influenced word selection. All of the words in the program were analyzed according to van der Veur's (1975) imagery ratings. Van der Veur rated 1,000 common words on a scale from 1 (least imagable) to 7 (most imagable). For the small percentage of words within the NEARStar program that did not appear on this list, we used the ratings of two adults to establish imagery values. A majority of words in all three levels of the NEARStar curriculum have high imagery ratings (see Table 3).

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Insert Table 3 about here

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For example in the Level-1 and Level-3 texts (columns 4 and 6 in Table 3), the words *hands*, *jam*, and *buns* (Level-1) and *star, ball* and *night* (Level-3) have imagery ratings of 6 or higher. Complying with research showing that children learn highly imagable words more quickly than less imagable words, the words with the highest imagery values were repeated 10 times, a third of the number of repetitions for less imagable words.

In the NEARStar program, words with low-imagery ratings were used as little as possible. The low-imagery word group was dominated by words from the most-frequent word list of Carroll, Davies, and Richman (1971). Of the 100 most-frequent words, 70 words appear consistently in the NEARStar program. These words are introduced at the rate of about one per lesson. These 70 words appeared an average of 34 times across the three levels of text. This level of repetition is consistent with the recommendation of 35 repetitions identified by Gates

and Russell (1939) as necessary for typically developing beginning readers to learn high-frequency words.

Many high-frequency words were presented in pairs that were central to the meaning of texts (for example, *up/down*, *in/out*, *here/there*, and *can/cannot*). Even when a high-frequency word was not presented in a contrastive pair, the meaning of the word was integral to the text (see for example, *on* in the Level-1 text in Table 1). By creating texts in this manner, ELLs are given an opportunity to understand the underlying concepts as well as to recognize the words.

In the Level-1 texts, high-interest words were chosen to emphasize particular initial and final consonants. Consonants were chosen on the basis of their frequency in written English and potential difficulty for common second language groups represented among America's ELL students. Initial consonant phonemes and graphemes for pairs of target words were chosen for maximum oral contrast. For example, in the contrastive pair *Mom* and *Dad*, the consonant /m/ is made with the lips, while the consonant /d/ is made with the tongue behind teeth.

Level-1 texts also systematically introduced selected common rimes thereby laying a foundation for phonics instruction in Level-2. Of the 50 unique words in Level-1, 23 had common, consistent VC rimes. For example, the high-interest words in the sample text for Level-1 (see table 3) —*jam, buns,* and *love*—permit contrasts of three initial and three final consonants. The words—*jam* and *buns*--also contain consistent, common rimes that are the basis for vowel and rime instruction in Level-2.

The Level-2 text sample illustrates our attempt to ensure that children do not over-generalize rime knowledge by attending to only one group of rimes in a text. In the Level-2 sample, a word with a target rime (*job*) is repeated several times so that children develop facility with that word. The same rime (*Bob)* also appears in the text. At the same time, words with the

same vowel but with different initial and final consonants appear (*Dot* and *Ron)*. By seeing

vowels with different rimes and initial consonants, children are encouraged to attend to the

beginnings and endings of words.

The majority of the words in the NEARStar texts, at all levels, permit students to apply

linguistic knowledge that is highly generalizable. The percentage of words that fall into the

phonetically regular (CVC) category and high-frequency groups reaches a high of 85% in the

second level of the NEARStar texts. This percentage is similar to that for the Open Court

decodable texts. Even the texts of Level-1, where the primary emphasis is high-imagery words

as a foundation for children's word recognition, have more high-frequency and phonetically

regular words than typical, current programs (78% for the NEARStar Level-1 texts versus an

average of 61% for typical, current programs (see Table 2)). The percentage of high-frequency

and phonetically regular words in NEARStar Level-3 texts (60%) is approximately the same as

the average for the first-unit texts of typical reading programs (61%). The Level-3 texts maintain

this level of exposure while introducing more complex vowels (long to r-controlled vowels) that

are the focus of phonics instruction at that level.

The low number of unique words per 100 (7 in Level-1 texts compared to an average of

23 for the first units of texts in contemporary reading programs) means that the NEARStar texts

give students many opportunities to practice their developing skill with a core group of high-

frequency and phonetically regular words.

Cognitive Load of NEARStar Texts

The review of literature produced few guidelines for establishing the cognitive load of

texts for beginning readers. However, we used several design strategies to attempt to reduce the

overall cognitive load on beginning readers. In Level-1, where almost every word is a new word

for beginning readers, we used engaging illustrations and predictable text structures to mediate cognitive load. However, there were limits on the use of the predictable text structure (see sample texts in Table 1). Even at Level-1, children are not expected to identify all of the words in the text from aural memory. The intention was to use predictable text structure and illustrations to ease the cognitive load but not to permit children to attend only to the illustrations or the aural production of the text.

Over-reliance on aural memory was also reduced by including two texts for each lesson. Both texts used similar words (e.g., *jam* and *buns* in the middle lesson of Level-1 and *classroom* and *jobs* in the middle lesson of Level-2). However, the storyline and text and sentence structures varied sufficiently so that children could not rely on aural memory exclusively to respond to texts. These strategies kept the number of unique words per 100, on average, to 7 in Level-1 and 11 in Level-3.

The total number of words in a text was also systematically constrained. Fountas and Pinnell (1999) identified total number of words as a distinguishing characteristic of text difficulty in their guided reading levels. While the total number of words is likely less a factor than the number of different words within a text, the length of the text influences beginning readers' ability to sustain a theme across texts. The total number of words in a text also determines the occasions for repetitions of new and previously introduced unique words. NEARStar texts ranged from an average of 37 words per text in Level-1 to 91 in Level-3. This range meant that texts in Level-1 provided two to three new, unique words each text. In Level-3, students encounter six new unique words, less than a third of the number of new, unique words in the texts of current commercial programs.

The review of literature on differences in children's learning of words as a function of linguistic content led us to forgo a formula for word repetition such as that followed by Gray et al. (1956). Word repetition was a function of the letter-sound correspondences within the word and the concreteness of the word. At the Level-1, concrete words like *cat* or *dog* were not repeated as often as less concrete and phonetically irregular words like *what* and *to*. Further, words that appeared later in the program were not viewed as requiring as much repetition as words that appeared earlier in the program. In Level-1, all words were repeated at least less four times. When singletons did appear in Level-2, they were of a particular type: words that shared a common, consistent rime that had appeared in numerous other words in the program. For example, once students had had exposure to can, Dan, man, and ran, tan appeared twice and Nan appeared as a singleton. Singletons and words with two or three repetitions are fewer in the NEARStar texts than in any current program listed in Table 1.

The number of unique words per 100 stays within a range of 4 words across the three NEARStar levels. At the same time, the program steadily increases the total number of words that students read across the three levels. This increase in the total number of words means students have an opportunity to apply their linguistic knowledge to steadily increasing text lengths. By the Level-3, students are reading texts with approximately the same number of words as texts in the 11 current beginning reading programs (i.e., 80-90 total words). One of the current programs (Rigby PM texts) has relatively fewer singletons and unique words per 100 compared to the other current programs, the percentage of high-frequency words and phonetically regular words is lower than average. Further, Rigby's percentage of multisyllabic words is near the average of the current reading programs at 18% (compared to the 7% for the Level-3 NEARStar texts).

The demands posed by the NEARStar texts on students' recognition of multisyllabic words are substantially lower than those of texts in the current programs. Multisyllabic words constitute an average of 16% of the total words in the 11 representatives of current programs. The percentage of multisyllabic words in NEARStar texts reaches a high of 7% in Level-3. The NEARStar texts provide students with many opportunities to read phonetically regular, monosyllabic words (including words with long vowel and r-controlled patterns) providing a solid foundation in applying word recognition strategies.

<div align="center">Conclusion</div>

The goal of the NEARStar program is to provide ELL students with texts that enable them to be successful with the entry level of currently available beginning reading programs. The design of the NEARStar texts has been grounded in research on linguistic content and cognitive load of beginning reading texts. The texts begin with a set of high-imagery words that pertain to topics of familiar but high-interest content to children. At the same time, these words were chosen to have consistent, common consonant and vowel grapheme-phonemes correspondences. High-frequency words, some of which contain irregular letter-sound correspondences, were regularly integrated into the texts. Whenever possible, these high-frequency words were presented in pairs with contrasting meanings (for example, *up* and *down* and *yes* and *no*). With this foundational knowledge, Level-2 continued to emphasize meaningful familiar topics such as the typical activities in classrooms and schools. In Level-2, children were encouraged to develop a self-teaching stance regarding common, consistent vowel and consonant patterns in English as exemplified by VC rimes. This linguistic knowledge continued to be extended with meaningful, high-frequency word pairs. In the third and final level of the program, children continue to read words that substantiate earlier phonetic content. They also

are exposed to a systematic set of high-imagery words that instantiate more complex phonetic content, including words with long vowels and r-controlled vowels.

Throughout the three levels, students are introduced to high-frequency words at the rate of one per text. These words are repeated sufficiently so that, by the end of the NEARStar program, students have been exposed to a core vocabulary that will account for a substantial percentage of the words that they will read in typical, primary-level texts.

The NEARStar texts, designed specifically for ELLs and other students who face challenges in learning to read, are intended to prepare students to meet the not insubstantial challenge of current beginning reading programs. Initial evaluation efforts document that children respond with enthusiasm to the texts and progress on a faster trajectory than their peers in regular reading programs (Brown, Hiebert, & Horowitz, in review).

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Table 1. Examples of First-Grade Texts from Four Programs[1]

Anthology (Scott Foresman, 2000)	Decodable Book (Harcourt Practice Readers, 1996)	Little Book (Sunshine/Wright Group,1996)	NEARStar		
			Level 1	Level 2	Level 3
FISH MIX I see one fish. I see two. I see three fish. Will they swim to you? How many yellow fish? How many blue? I see a mix of fish. How about you? Six little fish. They swim like this. One big fish. Its fins go swish!	IT'S HOT Tom sat on top. It's hot, said Dot. Come sit on top, said Tom. It's hot. Too hot, said Don. It's not hot here, said Dot. Come sit on top, said Tom. I am hot, too, said Todd. Come sit on top, said Don. Look! said Tom and Dot.	WOULD YOU LIKE TO FLY? Would you like to fly in a seaplane? Would you like to fly in a jet? Would you like to fly in a balloon? Would you like to fly in a blimp? Would you like to fly in a helicopter?	JAM I love jam on hot buns I love jam on cold buns. Jam, jam, jam. I love jam Jam is on my hands. Jam is on my face. Jam is on my feet. Jam is on me!	CLASSROOM JOBS We have new jobs in our classroom today. Jan has a new job. Who is Jan today? Dot has a new job. Who is Dot today? Bob has a new job. Who is Bob today? Ed has a new job today. Ed is the cook. Look at Ron!	WHAT ARE STARS? When you look at the sky at night, what do you see? Do you see many stars in the night sky? What is a star? A star is a big ball of hot gas that gives off light. Stars are far away from Earth.

[1]A maximum of 50 words of each text is provided, complying with American copyright stipulations. All texts except for Jam are incomplete.

Table 2. Features of Beginning First-Grade Texts

	Unique Words/100	Average Words per Passage	% of unique words				
			Single-tons	4+ repeti-tions	High-Fre-quency (100 most frequent)	Phonet-ically Regular (CV & VC patterns)	Multi-syllabic
STUDY 1A: 2000-2001 ANTHOLOGIES							
Harcourt (2001)	21	95	37	37	11	42	18
Houghton Mifflin (2000)	38	76	66	13	7	22	36
McGraw Hill (2001)	19	115	38	38	11	59	10
Open Court (2000)	21	95	43	34	10	50	12
Scholastic (2001)	21	124	47	28	9	44	18
Scott Foresman (2000)	21	83	40	35	17	62	7
STUDY 2: LITTLE BOOKS							
Harcourt's Practice Readers	28	49	35	38	29	53	2
Open Court's Decodable Books	24	74	36	35	22	64	8
Rigby PM Plus	11	70	18	68	29	22	26
Sunshine	26	49	50	34	24	21	28
Waterford	21	53	42	35	24	42	12
STUDY 1B: HISTORICAL ANTHOLOGIES							
Scott Foresman (1962)	10	18	0	100	6	56	6
1983	5	144	5	87	24	31	11
1993	29	79	46	29	9	30	21
NEARSTAR TEXTS							
Level 1	7	37	0	98	44	34	4
Level 2	10	60	14	63	32	53	2
Level 3	11	91	10	60	35	25	7

Table 3. Imagery Ratings of Words in the NEARStar texts

Type of Word	# of Words	Imagery Rating	Frequency Rating[1]	Phonetic Rating[2]	#Repe-titions	L1	L2	L3
High-imagery	100	6	6.4	4.3	10	40	32	43
Moderate imagery	98	3.8	4	4	15	38	42	33
Low imagery	65	1.8	1.6	4.5	27	22	26	24

[1]A frequency of 6.4 indicates 640 average in the Carroll et al. (1971) word list.
[2]Phonetic rating is based on scale from 1 (CV pattern such as *me*) to 8 (multisyllabic words).