Fluency From the First: What Works with First Graders

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TextProject Article Series
July 2014

TextProject, Inc.
SANTA CRUZ, CALIFORNIA

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Huey's review of research in 1908 revealed that psychologists recognized the relationship between rapid recognition of words and meaningful comprehension of texts as early as the 1880s. When cognitive scientists revived interest in reading fluency in the 1970s (LaBerge & Samuels, 1974), special educators integrated the construct into interventions with struggling readers (Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993). However, fluency was not emphasized in mainstream reading programs or assessments. It was not until the National Reading Panel's (NRP; 2000) report and the inclusion of fluency as one of the five reading domains within the Reading First/No Child Left Behind Act (U.S. Congress, 2001) that fluency was brought to the forefront.

While the Reading First mandates begin with first graders, the nature of appropriate fluency instruction and/or interventions with first graders is not clear. Whole language theorists recommended repeated reading of texts with young children (see, e.g., Holdaway, 1979). However, the research evidence from this procedure has been limited and has been confounded by the type of text that whole language theorists recommended for this activity—predictable text. Available evidence suggests that many beginning readers may repeat the words in predictable texts but they may be over-relying on their aural memory, rather than attending to the written words (Johnston, 2000).

An examination of studies used in the meta-analysis conducted by the NRP sub-group on fluency (Hiebert & Fisher, in press) showed that subjects in the studies were at least second graders with third grade the most frequent grade level. Further, most participating students with the exception of one or two studies were struggling readers. Therefore, the prototypes for fluency interventions were developed for a target population of struggling readers beyond the first grade.

The needs of children who are at the early stages of reading may differ, especially when these beginning readers also are learning to speak the language of instruction.

In this chapter, we review the results of a study (Hiebert & Fisher, 2004) where groups of predominantly English Language Learners were involved in repeated reading. The two treatment groups differed in the kinds of texts that they read but, regardless of text type, they read the texts repeatedly. The students in the control group were exposed to texts that have a high level of potential for accuracy (see, e.g., Stein, Johnson, & Gutlohn, 1999). However, these students were not asked to reread these texts systematically. We use these findings to suggest features of beginning reading instruction where first graders become fluent from the start.

Review of Research

The study and the recommendations for first-grade programs presented in this paper draw from several areas of research: (a) research on the development of oral reading rates, (b) characteristics of first-grade interventions and fluency, and (c) the role of repetition of words in texts.

Trajectories of Oral Reading Rate

From the end of grade one through the end of grade four, a student's reading proficiency relative to peers stays stable (Juel, 1988). Without an intervention, it is highly likely that those first graders ending the year in the 25th and 50th percentiles will be the same students in the 25th and 50th percentiles as fourth graders. Thus, even though national norms (Good, Wallin, Simmons, Kame'enui, & Kaminski, 2002; Behavioral Research & Teaching, 2005) are gathered on cross-sectional samples, these data do indicate the trajectories followed by students in particular quartiles.

Figure 1 provides end-of-year reading rates from grades one through eight based on recently reported national norms (Behavioral Research & Teaching, 2005).

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An examination of patterns of end-of-grade performances indicates that the 25th and 50th percentile groups made comparable progress as the students in the 75th percentile group from year to year. When the 75th percentile group levels off at sixth grade, the growth of the 25th and 50th percentile groups also stops. According to a study that was part of the 1994 National Assessment of Educational Progress (NAEP; Pinnell, Pikulski, Wixson, Campbell, Gough, & Beatty, 1995), few fourth graders who read slower than 125 Words Correct Per Minute (WCPM) attained a proficient or higher standard in silent reading comprehension on a grade-level passage. It takes until eighth grade for students in the 25th percentile group to attain a rate of 125 WCPM.

The performances of students over first grade deserve attention because it is at this point where the discrepant patterns begin. Fluency rates for five percentile groups at mid- and end-of-first-grade, drawn from the norms reported by Good et al. (2002), are provided in Figure 2. The patterns in Figure 2 indicate that, at the midpoint of

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grade one when fluency norms are first tracked, students in the 25th and 75th percentile already differ substantially. At the same time, the difference between students in the 25th and 50th percentiles is not substantial. However, from the middle to the end of Grade 1, the 50th percentile

group makes growth in WCPM that is comparable to the 75th percentile group: 30 WCPM for a single term. During no other time period will students make growth at this speed in a single term. However, the students at the 25th percentile make almost half this increase during the last semester of first grade. While students in the 25th percentile group will make comparable growth over the next school years as students in higher percentile groups, the comparatively less growth during the second half of grade one means that these students will be reading at rates that are below-grade level expectations. The question here is whether concerted interventions during the last half of first grade can decrease this gap between students at the 25th and 50th percentiles.

First-Grade Interventions and Changes in Fluency Levels

As was demonstrated earlier, the students in the meta-analyses of the NRP were older, struggling readers. The recommendation for repeated reading has been consistent in first grade. However, data on fluency have not been reported in the intervention reports (e.g., Pinnell, Lyons, DeFord, Bryk, & Seltzer, 1994). Further, the interventions include a range of activities beyond the repeated reading task.

A study by Jenkins, Peyton, Sanders, and Vadasy (2004) is an exception in the early reading intervention research in that fluency data were gathered and all activities were similar for students except for the types of texts that were used for repeated reading. In the Jenkins et al. study, first grade students read a text twice at introduction and once more in a subsequent lesson. Since Jenkins et al. needed to use available texts, the characteristics of the texts varied even on the target dimension of decodability. During the third portion of the study when a substantial amount of the growth in first graders' proficiency occurs (see, e.g., Good et al., 2002), both sets of texts had high percentages of decodable words: 80% for the more decodable treatment and 69% for the less decodable treatment. Further, the percentage of words among the 300 most-

frequent words was similar at this point as well: 21 and 24, respectively, for the more and less decodable conditions.

After the 25-week individual tutorial, both groups of students read non-phonetically, controlled texts at 35 and 37 WCPM compared to 26 for control students. On phonetically controlled texts, the students in the more decodable group read at 42 WCPM, the less decodable read at 41, and control students read at 28. Differences between students in the repeated reading condition and in the control group were significant on both kinds of text but not for the different text conditions. The average reading rate for the two types of texts across the two treatment conditions was 38 WCPM or the 33rd percentile in spring of grade one (Good et al., 2002), while the control group's mean of 30 WCPM is at the 24th percentile. The expenditure involved in individual tutoring for four days of each of 25 weeks is substantial. However, the Jenkins et al. (2004) study suggests that the opportunity to read repeatedly can affect the reading rate of first graders.

Repetition of Words and Fluency

A set of critical issues that have been debated more than investigated over the past several decades have to do with the amount of repetition and the unit of linguistic information (i.e., word, phoneme, rime) that beginning readers require (Hiebert & Martin, 2001). A related issue is the rate at which beginning readers can assimilate new linguistic information and how the size of the unit influences this assimilation. The factors of repetition and pacing in beginning reading materials have been sorely neglected over the past two decades as philosophies of text have been promoted (Hiebert & Martin, 2001). For young children who are learning to speak English at the same time they are being asked to learn to read, these issues are paramount.

Much of the existing knowledge on repetition stems from the work of Gates (1930) who did several quasi-experimental studies of children's recognition of high-frequency words in first-grade classrooms with particular kinds of materials. He called his primary experimental texts the "60" materials, referring to the presence of one new word out of every 60 words. In at least one context, Gates compared the *60* texts with texts where one new out of every 14 words. Gates concluded that "this group of bright pupils could not go ahead with this material without supplementary work." (p. 37). The supplementary work that Gates described was 20 minutes of word study and 30 minutes of reading phrases, sentences, and paragraphs on worksheets, blackboards, and so on. According to Gates, the students in this classroom where he described the students as high-ability required additional exposure to the words. As the latter description indicates, Gates differentiated the rate of repetition according to students' IQ. Based on his investigations, Gates reported the number of repetitions required for students of different IQ levels. Students in the average IQ range required 35 repetitions; those in the 60-69 range required 55; and those with IQs from 120-129 required 20 repetitions of a word to recognize it.

Gates's (1930) conclusions became the basis for the creation of first-grade textbooks read by several generations of American children. While providing a commendable start in the research, Gates's work was based on a particular type of text—narratives limited to the most frequent words. As analyses of these texts would show several decades later, the text style and content that was possible with the first 300 words was sufficiently stilted and artificial to create problems in comprehension (Amsterdam, Ammon, & Simons, 1990). Subsequent research also demonstrated the manner in which word characteristics influenced word repetition. Research on word imagery, for example, showed that beginning readers learn words with high imagery values (e.g., *apple*) more rapidly than words with low imagery values (e.g., *is*) (Hargis, Terhaar-

Yonkers, Williams, & Reed, 1988). Further, when 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.

While evidence points to the fact that word characteristics influence the number of repetitions beginning readers require to recognize a word, it is likely that many beginning readers—especially those who are learning to speak English at the same time they are learning to read it—require at least several repetitions of a word to remember it, even if the word is highly meaningful and phonetically regular. There is also evidence that researchers, policy-makers, and textbook publishers have not been concerned with the repetition of words in texts for beginning readers over the past two decades. For example, Foorman, Francis, Davidson, Harm, and Griffin (2004) reported percentages of as high as 70 of single-appearing words in the units of current first-grade textbooks. A response to this finding of many single-appearing words in first-grade textbooks is that the word has been replaced by the phoneme as the unit of repetition in first-grade textbooks according to the policies of America's two largest textbook adoption states, California and Texas (Stein et al., 1999). The research foundation of the number of repetitions that are required to know a phoneme in *any* word is nonexistent (Hiebert & Martin, 2001). Further, many single-appearing words are multisyllabic words that can be difficult for beginning readers to decode.

Neither the degree to which individual nor groups of phonemes has been addressed from the perspective of English Language Learners. By contrast, a robust literature exists on the nature and size of vocabulary for adult learners of English as a Foreign Language (EFL). According to Nation (1990), learners of EFL require a productive vocabulary of around 2,000 high-frequency words plus the strategies to deal with low-frequency words. Nation estimates that an additional

1,000 high-frequency words are needed by EFL learners to be successful in English university programs.

The 2,000 words identified by Nation (1990) are the 2,000 headwords from the General Service List (West, 1953). Bauman (2004) in revisiting the General Service List has identified a group of related words (e.g., acts: actor, actress, action) as well as verb forms (acts, acted, acting), and plurals (e.g., actors, actresses, actions). The result of Bauman's additions is a list of 5, 500 words. Nation (1990) advocates the use of texts that have been written to reinforce the core vocabulary (in his case, 2000 headwords from the General Service List) with EFL students. The issue of repetition is not raised. Further, adult EFL students can presumably read in their native languages.

The repetition of a core group of words characterizes the interventions where the fluency levels of students have changed (Hiebert & Fisher, in press). However, in reading policy, there have been two different approaches. One is the phoneme as the unit of repetition. The other has been the word—with particular characteristics of those words—as the unit of repetition. To date, there has been no comparison of naturally occurring texts with these two units of analysis. The study (Hiebert & Fisher, 2004) that is summarized in this chapter addresses this issue.

Description of Study

The question addressed in the Hiebert and Fisher (2004) study was whether the fluency trajectory for students in the bottom quartile can be changed. We are not suggesting that all students can attain the rates of students in the first quartile. However, in that students at the 25th percentile are performing quite comparably to their counterparts at the 50th percentile in mid-first grade, our interest was in whether these students could attain higher levels of fluency.

The study was implemented with first-grade, English Language Learning students during the final trimester of the school year. Students attended two schools where the percentage of native Spanish speakers was in the range of 92-97%. Students from a particular class were assigned to one of three groups: (a) Single-Criterion (SC) Text Intervention, (b) Multiple-Criteria (MC) Text Intervention, or (c) control. There needed to be at least six children from a class who participated in the intervention groups since classroom instruction was controlled by having the same project teacher work with one SC Text and one MC Text group, each with three students. Only when there were more children than there were slots for the intervention in a particular class were children assigned to the control group. This procedure yielded 27 students in each of the two intervention groups and 10 students in the control group.

Instruction

Students met in small groups with a project teacher for 24 half-hour sessions over an 8-week period. Project teachers were provided with lesson plans, developed by the investigators, for each text. Time allocations were provided for each of four activities: (a) word card activities that used two words with particular letter-sound correspondences from a text (6 minutes); (b) three readings of a new book: teacher led read-aloud with a retelling by students of the story, paired reading, and choral reading (10 minutes); (c) writing words on individual chalkboards (5 minutes); and (d) reading of an additional book or rereading of books from previous lessons (9 minutes).

Texts

The texts that were used in the single-criterion condition were the decodable books of the Open Court program (Adams et al., 2000). The underlying curriculum and accompanying teacher guidance for this program systematically introduces beginning readers to phonemes. The texts in

the multiple-criteria condition were the little books of the NEARStar program (Pacific Resources for Education and Learning, 2003). These books were written to systematically introduce beginning readers to three types of written words: (a) words with common and consistent letter-sound patterns, (b) high-frequency words, and (c) high-imagery words (see, Hiebert, Brown, Taitague, Fisher, and Adler, 2003 for further description).

Both the SC and MC programs provide 40 eight-page books in their beginning reading level. Characteristics of the texts in both the SC and MC programs are summarized in Table 1 and illustrations from each of the programs are given in Table 2.

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Insert Tables 1 & 2 about here

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The data in Table 1 indicate that both programs emphasize short vowels at the early level used in this intervention. The texts at the beginning of each 40-book program had approximately the same number of words, although the number of words per text increased more rapidly in the SC program than in the MC program. Total number of words was kept equivalent by using 30 SC texts (1689 words) and 35 MC texts (1667 words). The 40th text of each program was withheld for use in assessment.

The programs were different in number and kinds of unique words. The SC program had 296 unique words, 70% with short vowel patterns and an additional 10% among the 100 most-frequent words. Of the 145 unique words in the MC program, 58% had short-vowel patterns and an additional 23% were among the 100 most-frequent words.

Assessments

Assessments were individually given to students before and after the intervention. The assessments consisted of two groups of words presented individually at three-second intervals on a computer: (a) short-vowel words and (b) high-frequency words and a set of text reading measures that considered rate of reading, accuracy, and comprehension: (a) first-grade passages of the Texas Primary Reading Inventory (TPRI) (Texas Education Agency, 2002) and (b) the 40th texts of the SC and the MC programs.

Results

The three groups did not differ on any of the pretest measures. On the posttest, the main effect for group was not significant for the 3-second recognition of phonetically regular words but it was for all three measures of WCPM (the preprimer text of the TPRI and the 40th texts from both the SC and MC programs). Post-hoc analyses showed that the difference on the preprimer text of the TPRI was between the two intervention groups and the control group as evident in the gain scores: 23 for the SC group, 27 for the MC group, and 10 for the control group. Similarly, for the 40th SC book, the control group's gain of 3 words the control group was significantly less than the SC's gain of 9 words and the MC's gain of 11 words. On the 40th text of the MC program, post-hoc analyses showed that the MC group performed significantly better (gain of 23 wcpm) than the SC group with its gain of 13 wcpm and that both intervention groups had significantly higher performances than that of the control group whose gain was 2 wcpm.

Implications and Directions

Before describing the implications of the findings for first-grade fluency, it is important to identify what was not addressed in this intervention. First, the intervention did not engender a spirit of "reading faster" among these first-grade readers. While students were timed during the assessments, teachers neither timed students during lessons nor did children chart their times, as

is often the case in fluency interventions with older, struggling readers. The intervention was aimed at increasing the amount that first graders read.

Second, the intervention was not extensive. The 12 hours of the intervention is the same amount that California is mandating for recipients of Reading First grants during a *single* week of school. Even within a 12-hour period, students in the two interventions made gains beyond those of students who received classroom instruction. The students in the SC group made a gain of 2.9 wcpm on the TPRI for every week of instruction, close to the 3 words per week that Fuchs et al. (1993) have proposed as an ambitious goal for closing the achievement gap. With a gain of 3.4 wcpm, students in the MC group exceeded the ambitious goal. Students in the control group made progress but they were moving at a rate that left them far from the goal of 50 wcpm that has been identified as necessary by end of grade one if students are to attain adequate reading levels in subsequent grades (Fuchs et al., 1993; Good et al., 2002).

What the two interventions did address was to have students repeatedly read accessible text. We will use three words from the previous sentence to describe what we believe to be critical if the students who are in the bottom quartile are to have a different reading trajectory: accessible, text, and repeatedly.

Accessible

According to the potential for accuracy criterion where the instruction of phonemes is used as the criterion for text difficulty (Stein et al., 1999), the decodable texts that were part of classroom lessons during the last quarter of grade one should have been accessible. The potential for accuracy perspective holds that, if all of the grapho-phonics relationships have been presented in lessons in the teacher's manual, students should be able to read the words in a text. However, the assumption that all children learn the patterns after a handful of lessons has little

empirical foundation. The data on reading rates at mid-grade-one that are presented in Figure 2 indicate that, on a passage such as Spring is Coming (a typical DIBELS 1.2 benchmark passage that is excerpted in Table 2), half of the national first-grade cohort take from one to four minutes to read the five sentences or phrases on the DIBELS Benchmark Grade 1.2 assessment. On indices of high-frequency words and monosyllabic simple-vowel pattern words, the DIBELS text is considerably easier than the grade-level decodable that students in the study were reading in their classrooms. By the fourth quarter of grade one, the content of the decodables emphasizes four affixes: -ful, -y, re- and un-.

Text

In one of the few investigations of the ratio between word study exercises and text reading, Gates (1930) concluded that students did better in a classroom where they saw words in texts of a variety of types (poems, informational, narrative) than in worksheets and other exercises. Gates's conclusions need to be understood in the context of the words that he emphasized—high-frequency words rather than phonetically regular words. However, the issue that Gates raised—the ratio between word study and text reading at different points in reading development—has received little subsequent attention. In designing the instructional routine for the study, particular choices needed to be made about both the kinds of word study and the ratio of word study to text reading.

Several different kinds of word study were provided in the instructional routine: talk about the words, discriminating critical features of the word patterns auditorily, and spelling words. The contribution of certain kinds of word study activities to student achievement cannot be isolated in the Hiebert and Fisher (2004) study. Nor can conclusions be made as to the appropriate ratio of word study to text reading. Both activities are likely critical. But available

evidence does show that students require opportunities to apply the information that they have been taught and practiced in word-study exercises in the texts that they read. All the word study instruction in this study was directly connected to the words that students read in their texts.

While having little guidance as to the amount of text reading beginning readers require, a goal in designing the instructional routine was to increase substantially the amount that students read as part of the lesson. Data from previous decades indicates that the amount that students read in classrooms is critically related to their reading achievement (Fisher & Berliner, 1985). From the best available data (Allington, 1984), the amount that low-performing first graders typically read per hour during classroom instruction is approximately 27 words per half hour.[2] In both treatments in the study summarized in this chapter, students read approximately 6,500 words over a 12-hour period or approximately 270 words per half hour. The intervention increased tenfold the amount that students were reading in their first-grade classrooms.

For English Language Learners, we predict that the reading of text is particularly important. A second-grade study with a similar population showed a sharp difference between children's abilities to read nonsense and sight words and text reading. Whereas students were at the 50th percentile on the word reading tasks, they were at the 15th percentile in text reading (Hiebert, in progress).

Many programs are directed at increasing the amount that students read at home—and this goal is a worthy one. The amount that students read at home varies substantially, according to percentile levels (Anderson, Wilson, & Fielding, 1988) and the differences accumulates, making an ever-increasing achievement gap (Cunningham & Stanovich, 1997). However, if students are not reading voraciously in their classrooms, it is hard to expect that they would read voraciously at home, especially when language and cultural patterns differ in the two contexts. If

English Language Learners are to read voraciously at home, they also need to read voraciously at school. Voracious reading begins with students having frequent opportunity to read in their classrooms.

Repeatedly

Repeated reading of texts can be seen to be critical for English Language Learners in that it supports them in becoming fluent with particular texts. It also likely increases the amount of exposure that students have to words. At the current time, the state-adopted textbook program used in the schools where the intervention was conducted provides approximately 10,000 words in the decodable and anthology components of first-grade. Across 180 instructional days, students are provided approximately 56 words per day or 280 words per week (even less than the low-achieving students in Allington's study in 1984). While the amount of reading that is required to achieve particular levels of fluency has yet to be substantiated, providing students who learn to read in school approximately 55 words a day is likely insufficient to become literate. However, when these texts are read three or four times, first graders will be reading approximately 1,000 words a week rather than 275. Students who do not have frequent occasions for text reading outside of school appear to benefit from even a short period of scaffolded reading, as occurred in the study summarized in this chapter. At the present time, we do not know how much guided and repeated reading is needed to develop fluency. However, it is clear that, if fluent reading is to be developed among English Language Learners, the amount of exposure to text that they have in classrooms needs to increase.

Endnotes

[1]Any earlier draft of this chapter was funded by the U.S. Department of Education (U.S. ED) under award number R203F990026 and has been presented to the Pacific Resources for Education and Learning as Deliverable V.2.1. The content does not necessarily reflect the views of the U.S. ED or any other agency of the U.S. government.

[2]Allington (1984) calculated that low-achieving students read 400 words over a week of 90-minute reading periods (450 minutes of instruction = 7.5 instructional hours): 400 words/7.5 hours = 53 words per hour.

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Table 1. Features of Four Examples of First-Grade Texts

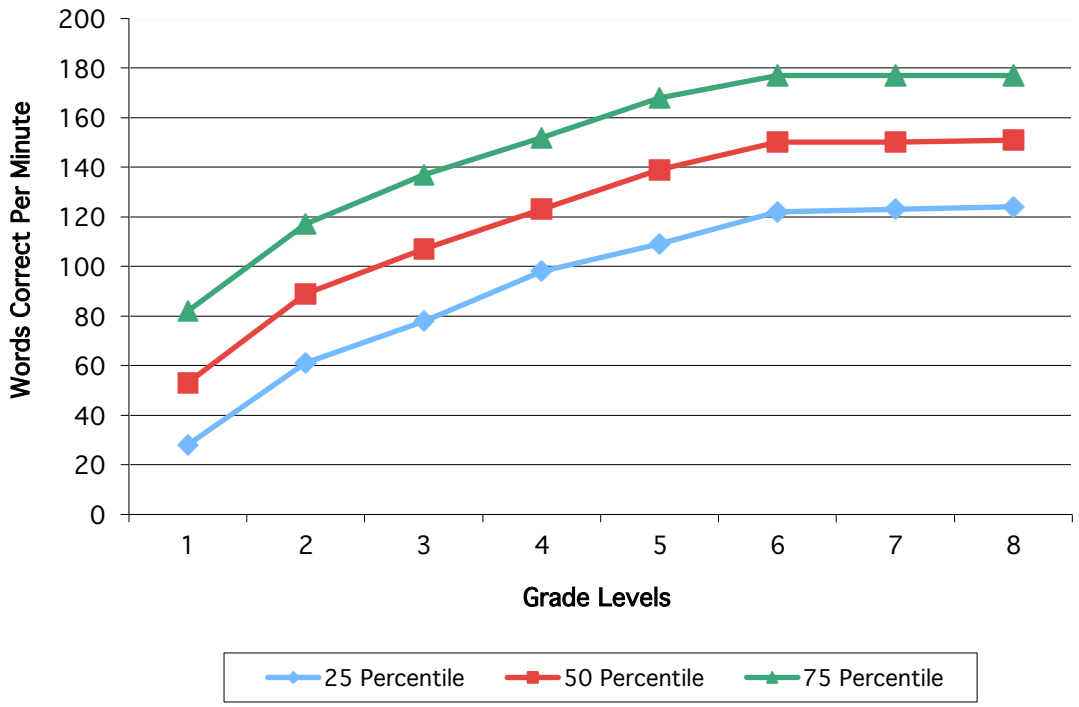
	Total/Unique words	300 most-frequent words	Short & long vowel patterns	r-controlled & diphthong vowel patterns	Multi-syllabic
Study: OC	1689/296	26	58	4	11
Study: NS	1667/145	51	41	5	3
DIBELS 1.2	609/246	50	21	7	21
Classroom Decodables	1218/461	27.5	26	9	37

OC= Open Court
NS= NearStar

Table 2 Excerpts from Four Exemplars of First-Grade Texts

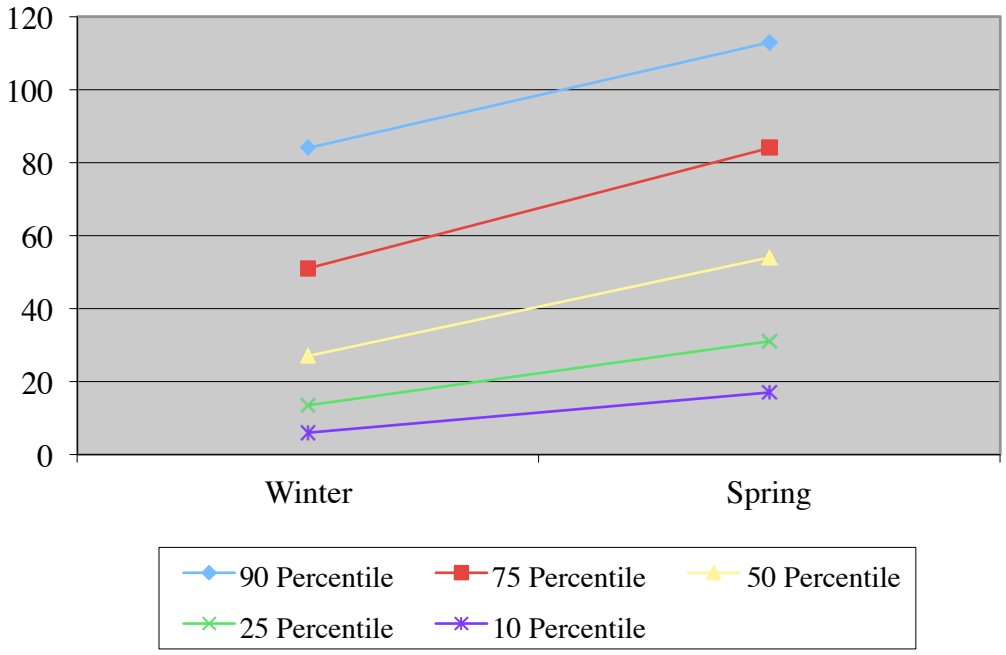
Program	Excerpt
Study: Open Court	NAN'S FAMILY On the mat Sam sits on his mat. Pat sits on Sam. Tim sits on Pat. Nan sits on Tim. Tip sits on Nan. Tip.
Study: NEARStar	My Mom See my mom. See me. Feet to feet. See my mom. See me. Hands to hands. I love my mom!
DIBELS	Spring is Coming It has been so cold this winter. The wind blew and blew. It rained and rained. The days have been gray and dark.
Classroom Decodables (at time of study)	Sunny's Buddy Sunny's new friends played games. They ate jelly treats, drank fizzy drinks, and got dizzy dancing. What a nutty, silly bunch! Then everyone went home.

Figure 1. Typical Reading Rates for Students at Grades 1-8[1]



[1]Based on norms reported by Behavioral Research & Teaching (2005)

Figure 2. Mid- and End-First Grade Rate of Reading Levels[1]



[1]Based on norms provided by Good et al. (2002)