[05/23/02]

Text Matters in Developing Fluent Reading

Elfrieda H. Hiebert & Charles W. Fisher

University of Michigan

[submitted for publication]

Abstract

This paper reports on two studies that address the function of text characteristics in the development of reading fluency. In the first study, texts used in the research on which the National Reading Panel (NRP; 2000) based its conclusions about the role of fluency in reading and its sensitivity to practice were grouped in four categories. Three of these text categories (pre-1990 basals, skill builders, and high-interest/low-vocabulary texts) used controlled vocabulary and accounted for 80% of all texts used in the studies reviewed by the NRP. When a variety of features of these controlled vocabulary texts were compared with those in current, mainstream textbook programs, the primary difference was the treatment of critical or hard words. Compared to controlled texts, current mainstream textbook programs have substantially more critical words, and approximately 70% of these critical words appear a single time.

In the second study, the findings from this analysis of NRP-reviewed fluency studies, research on the role of prior knowledge in reading, and research on metacognition were used to design texts called QuickReads. Sixty texts, five pertaining to each of six social studies and six science topics, were written. Ten of the topics (50 texts) were used in a nine-week intervention study with 446 students in grades 2, 3, and 4. The two remaining topics were used for assessment. The QuickReads intervention significantly increased reading fluency for both native English speakers and English language learners.

Text Matters in Developing Fluent Reading

By fourth grade, all but a small percentage of American schoolchildren can recognize the words in a fourth grade text with a reasonable degree of accuracy. However, for approximately two thirds of these students, word recognition occurs so slowly that comprehension is jeopardized. Evidence for these statements comes from the largest study of students' oral reading fluency to date: the 1994 National Assessment of Educational Progress (NAEP). As part of this large study, Pinnell, Pikulski, Wixson, Campbell, Gough, and Beatty (1995) found that students' oral reading rate of a text was correlated with comprehension on an earlier, silent reading of the same text. Those students who read 130 words per minute or more attained an average level of 244 on the NAEP comprehension scale. For the two thirds of the sample who failed to attain at least 238 on the comprehension scale, few read above 125 words per minute and most read substantially slower.

The National Reading Panel (NRP; 2000) concluded that fluency, defined in terms of speed, accuracy, and proper expression, is a critical part of proficient reading. Further, they identified repeated and guided oral reading as instructional practices that consistently and positively influence fluency, word recognition, and comprehension through at least grade 4 for typically developing readers and through high school for students with reading problems. This attention to instructional method is understandable, since the literature on fluency has typically focused on the amount of guidance for readers and the number of repetitions with a given text. The Panel, however, following the trend set by currently available research on fluency, neglected to explore the impact of different text types on fluency. In other words, understandings of reading fluency have not been informed by varying the characteristics of texts used in studying

fluency; in almost all studies to date, students in treatment and comparison groups have read only a single type of text.

In spite of this lack of attention to text types in either the NRP review or in the fluency literature, text characteristics may have substantial effects on fluency development. In the past 15 years, the prominent texts used in reading instruction have moved from those strictly controlled by readability formulas to literature. Though efforts have been made to increase the number of decodable words in first-grade texts in America's two largest states, Texas and California, there remains little constraint on text characteristics for students in grade 2 and above (Hiebert, 2002).

While considerable change has occurred in the texts that students read, these changes have often occurred without examination of the separate effects of, or possible interactions among, text features, student learning processes, and instructional practices. A case in point in which student learning processes and instructional practices have been studied with little or no regard to text characteristics is reading fluency. An overarching goal of this paper is to draw attention to, and stimulate research on, the role that text characteristics play in fluency and, by extension, other aspects of literacy development.

This paper presents two related studies of reading fluency. In the first (Study A), texts used in previous studies of fluency are classified in four generic types. These text types are then compared and contrasted on a variety of text characteristics that, either theoretically or empirically, affect fluency development among young readers. In the second study, information on text characteristics taken, in part from Study A, and findings from existing research on teaching and learning are used to develop design specifications for texts to improve reading fluency. These model specifications are then used to produce a set of 60 prototypical texts called

QuickReads. The new texts are empirically tested in an intervention study involving 446 second, third, and fourth-grade students.

Study A: An Analysis of the Texts in the NRP's Fluency Database

Early interest in fluency as a component of learning to read was spurred by the popularity of two instructional methods—neurological impress (Heckleman, 1966) and repeated reading (Samuels, 1979). These methods were introduced into schools where a particular type of text had dominated reading instruction for decades. The model of text that drove American reading instruction for the 50 years prior to the late 1980s stipulated highly controlled vocabulary. Control was achieved through readability formulas that used various high-frequency word lists or the number of syllables per word to determine vocabulary difficulty and sentence length, which were used to determine syntactic complexity. Texts characterized by monosyllabic, frequently occurring words and short sentences were deemed easier than texts containing less frequent or multisyllabic words and long sentences.

A sea change occurred in text characteristics used in reading textbooks between the late 1980s and early 1990s. Textbook programs for beginning and developing readers that had been controlled by readability formulas were replaced by children's literature (Hoffman et al., 1994). With the use of literature in textbook programs rather than controlled texts, the number of total words in texts decreased while the number of unique words increased (Hoffman et al., 1994). Authors of children's literature tend to limit the plots and story length of books for children, but children's literature contains substantially more rare words than either earlier school texts or typical adult conversations (Hayes, Wolfer, & Wolfe, 1996). By the late 1990s, several states were calling for textbook reform. Texas (Texas Education Agency, 1997) and California

(California English/Language Arts Committee, 1999) mandated that reading textbook programs purchased with state monies include decodable texts. Several years after these mandates, literature continued to dominate textbook programs beyond the first semester of first grade (Hiebert, 2001). Further, first-grade texts continued to feature high numbers of unique words, many of which appear a single time (Foorman, Francis, Davidson, Harm, & Griffin, 2002).

The research literature contains a handful of studies examining the effects of text on reading fluency. These studies suggest that text features matter in fluency development. Rashotte and Torgesen (1985) studied the effects of shared vocabulary in texts used for repeated reading. The study was conducted among struggling readers reading texts that were several years below the students' grade level. All texts used in the study came from the Reader's Digest skill builders and had a second-grade readability. Rashotte and Torgesen modified the texts to create one set that had low overlap of vocabulary across stories and a second set that had a high level of overlap. The condition with the highest percentage of shared words yielded the greatest gains in reading speed. When new stories shared many words with the original story, fluency gains were achieved with the new stories. However, shared vocabulary did not produce significant differences on accuracy or comprehension.

Faulkner and Levy (1994) examined the effects of word and conceptual overlap within grade-level texts among good and poor readers. Students read pairs of texts in four conditions: (a) words and content identical (rereading), (b) few shared words but same content (paraphrasing), (c) many shared words but different story content (word overlap), and (d) few shared words and different story content (unrelated stories). Among their findings, Faulkner and Levy report that both good and poor readers exhibited the most transfer when words and content were shared (i.e. rereading). Poor readers, unlike good readers, also improved on both speed and

accuracy when texts had high levels of word overlap. Word overlap was helpful to poor readers even when the shared words appeared in different stories.

Using this finding, Faulkner and Levy (1994) argued that Dowhower's (1987) results on improvements in rate, accuracy, comprehension, and prosodic reading, regardless of training, could be explained by the 77% overlap between words in the practice and final texts. Similarly, the findings of Samuels (1979) and Herman (1985) that poor readers read later texts faster on their first reading than earlier texts reflects opportunity to practice on a shared vocabulary.

Hiebert and Fisher (2002) studied effects of text characteristics on fluency during the first trimester of reading instruction. Students read two types of texts from existing reading programs. Students performed significantly better on reading speed, accuracy, and comprehension when texts had more decodable words and high-frequency words. The largest effect occurred on reading speed.

Drawing on these studies, the available evidence suggests that text characteristics affect fluency, especially among beginning and struggling readers. Since text features were not considered in the National Reading Panel's recommendations on instructional practices to improve reading fluency (NRP, 2000), it may be useful to examine the types of texts that were used in the fluency studies included in the Panel's review. If reading educators heed the Panel's recommendation to provide fluency practice, they are very likely to rely on available texts to implement such practice. However, the characteristics of texts that are available in classrooms (i.e., literature-based textbook programs) may differ from those on which the fluency research was based. The current study identifies and compares types of texts used in studies reviewed by the NRP with texts in current literature-based school textbook programs on a variety of measures of word frequency and word decodability.

<u>Identifying Text Types and Their Features</u>

The report of the NRP's subgroup on fluency lists 51 studies as the basis for its conclusions. Thirteen of these studies were used in a meta-analysis, while the remaining 38 were used to test patterns identified in the meta-analysis. Forty-eight of the 51 studies were obtained for the present analysis (see Appendix A). A list of the texts used in these studies was generated from descriptions in the method sections of the available research reports. In some cases, researchers identified specific programs and texts that were used. In many cases, however, researchers described the texts in general terms such as "a third-grade basal reader" (Smith, 1979, p. 40). When nonspecific nominations of basal texts were made, they were sorted into categories for pre-1990 or post-1990 basal text programs. Prior to 1990, publishers used readability formulas in generating new texts or manipulating existing texts. By 1990, mandates in the two largest states with central textbook selection—California (California English/Language Arts Committee, 1987) and Texas (Texas Education Agency, 1990)—had led to a proliferation of textbooks with literature selections as opposed to texts that conformed to readability formulas. The post-1990 basal anthologies, particularly at grade 2 and above, are composed entirely of children's literature. Consequently, basal texts after 1990 are presented as literature.

Beyond pre- and post-1990 basals, three additional types of text were used in the studies reviewed by the NRP. One of these categories—predictable or little books—was included with literature since little books have dominated the first-grade component of literature-based programs (Hoffman et al., 1994). Only one study (Blum, Koskinen, Tennant, Parker, Straub, & Curry, 1995) explicitly used predictable or little books. The other two types of text were the skill builders originally published in the 1960s (e.g., skill builders published by Reader's Digest) and

high-interest/low-vocabulary (HI/LV) texts (e.g., HI/LV series published by Random House or Harper Collins).

Examples of specific texts cited in the target studies were obtained whenever possible. For each type of text, an exemplar was selected. The most frequently used texts or programs within a text type were selected (see Appendix B). For the skill builder program, the SRA Skill Builders (Boning, 1963/1997) were used. This program was originally published in 1963 as the Barnell Loft Skill Builders and complied with views of vocabulary control prominent at that time.

The choice for the pre-1990 basal program was difficult because no single program was cited more than once within the sample of studies. The decision to use a 1966 textbook program rather than a program from the 1970s or 1980s was based on the recent use of two basal series with 1960s copyrights in a well-designed study of fluency (Shany & Biemiller, 1995). An analysis of texts across the decades from 1960 through 1990 showed that texts copyrighted through the mid-1980s adhered to readability standards similar to 1960s texts (Hiebert, 2001). A 1966 copyright of Houghton Mifflin (HM; McKee, Harrison, McCowen, Lehr, & Durr, 1966) was used as the exemplar for the pre-1990 basal programs.

The 2001 copyright of the same basal textbook publisher (HM), Invitations to Literacy (Cooper et al., 2001), was chosen for the post-1990 basal category. A basal program was deemed a suitable choice for literature, rather than choosing individual trade books, for several reasons. First, basal programs constitute the materials that are readily available in the majority of American classrooms (Baumann, Hoffman, Duffy-Hester, & Ro, 2000). Second, the anthologies of post-1990 basal reading programs consist of literature. Using selections from this particular post-1990 basal program provided texts that are comparable to those used in Eldredge's research

(Eldredge, 1990; Eldredge, Reutzel, & Hollingsworth, 1996), a line of work that was represented in the NRP's meta-analysis. Searches on a library database and bookstore inventory indicated that all 10 texts in the third-grade anthology of the 2001 Invitations to Literacy program (Cooper et al., 2001) were available as separate trade books.

HI/LV texts began with books by well-known children's authors, such as Elsa Minarik's *Little Bear* (1957) and Dr. Seuss's (1960) *Green Eggs and Ham*. Series of HI/LV texts were expanded to include levels beyond beginning reading. The exemplar that was selected for analysis of text features was the original HI/LV program called the *I can read* books (HarperTrophy Publishers). This program was cited in two of the four studies with HI/LV books.

Third grade was chosen as the focus grade level because of its use in public policy on reading (Bush, 2001) and the stability of reading status after this grade (Chall, Jacobs, & Baldwin, 1990). To avoid possible statistical anomalies associated with individual texts, instructional units were chosen as the unit of analysis. Following the convention established by Chall (1967/1983), an instructional unit was taken to be 10 texts. The program with the shortest texts, the SRA Skill Builders (Boning, 1963/1997), determined the size of the word samples. The third-grade SRA texts had a mean length of 230 words. To ensure comparability, 230-word samples were taken from 10 consecutive texts in the three remaining exemplars. While individual texts in the three exemplars were considerably longer than 230 words, this sample size is about the upper limit of text length for a daily session on fluency in third grade.

An instructional unit of 10 consecutive texts was selected from the middle of the third-grade component of the four program exemplars. Each of the resulting 2,300 word samples were analyzed with the Text Elements by Task (TExT) software (Hiebert & Martin, 2002). The TExT software provides information on the following text characteristics: number of unique words per

100 running words of text; percentage of unique words that are also among the 1,000 most frequent words identified by Carroll, Davies, & Richman (1971) and recently confirmed by Zeno, Ivens, Millard, and Duvvuri (1995); percentage of the remaining unique words that are monosyllabic and decodable by the end of third-grade; percentage of remaining words (i.e., infrequent, not readily decodable words); and number of repetitions of each word in the previous category. The use of the 1,000 most frequent words and monosyllabic decodable words as criteria for the third-grade curriculum was established by analyses of a variety of third-grade, high-stakes assessment instruments (Hiebert, 2002). This group of words (i.e., the 1000 most frequent words plus monosyllabic decodable words) accounted for at least 90% of the unique words in three types of third-grade assessments: norm-referenced tests, criterion-referenced state tests, and informal reading inventories.

<u>Analysis of Text Types</u>

Table 1 presents a classification of studies included in the NRP review[1] into four text types. Pre-1990 basal texts were used in 51% of the studies, while skill builder texts, HI/LV texts, and post-1990 basal texts (children's literature) accounted for 20%, 9%, and 20% respectively. The distribution of text types used in the NRP meta-analysis was similar, with the

_____

Insert Table 1 about here

_____

exception that skill builder texts were not represented. In the meta-analysis, pre-1990 basal texts were used in 58% of the studies, skill builder texts in 0%, HI/LV texts in 17%, and post-1990

[1] The NRP review included 51 studies. Copies of 47 of these studies were obtained for the current analysis. For 2 of the 47 studies, there was insufficient information about the experimental texts to make a classification.

basal/literature in 25%. When texts with controlled vocabulary are clustered (i.e., pre-1990 basal, skill builder, and HI/LV texts), they were used in approximately 75–80% of the studies on which the NRP's conclusions on fluency were based.

The NRP reported a robust effect size of .48 across all measures (fluency, word recognition/accuracy, vocabulary, and comprehension) in their meta-analysis of 13 fluency studies. The meta-analysis included three studies that used post-1990 basal/literature texts for fluency practice. The findings on fluency in these studies were examined to clarify their contribution to the meta-analysis. Two of the studies (Eldredge, 1990 and Miller, Robson, & Bushell, 1986), focusing on comprehension and vocabulary, did not assess fluency. In the third study (Eldredge et al., 1996), no difference between treatment and comparison groups was found on the fluency measure. The robust effect size reported by the NRP for instructional practices supporting fluency received no contribution from the three studies that used post-1990/literature texts.

Differences among the four types of text were described in terms of the word features summarized in Table 2. The controlled vocabulary texts (i.e., the pre-1990 basal, skill builder, and HI/LV text types) were very similar on three important dimensions. First, they contained approximately 26 unique words per 100 words (range 24 to 27). Second, when the percentage of unique words that fall into the 1,000 most frequent words (column 5 in Table 2) and the percentage of unique words that fall beyond the 1,000 most frequent words but are monosyllabic and decodable (column 6 in Table 2) were summed, they accounted for about 85% of the total unique words (range 84 to 86%) in the three types of controlled texts. Note that the HI/LV texts had a somewhat lower percentage of unique words falling into the 1,000 most frequent words but a larger percentage of unique words falling beyond this range that are monosyllabic and

decodable. The third similarity among the controlled texts was their treatment of critical or hard words (columns 7 and 8 in Table 2). Words that were infrequent or multisyllabic and difficult to decode accounted for 13–16% of the unique words in the controlled texts. Further, the percentages of critical words that appeared a single time in the controlled texts (i.e., singletons) were relatively small: 7% in pre-1990 basal texts, 11% in skill-builder texts, and 10% in HI/LV texts.

_____

Insert Table 2 about here

_____

The post-1990 basal/literature texts showed a different pattern than the other three groups. They contained about 10 more unique words per 100 words than the other three text types. Compared to controlled texts, the post-1990 basal/literature texts contained more unique words (columns 3 and 4 in Table 2), fewer high-frequency words (column 5 in Table 2), fewer words beyond the 1,000 most frequent words that are monosyllabic and decodable (column 6), more infrequent and difficult-to-decode words (column 7), and two to three times as many singletons (column 8). Of the 229 unique words that were both infrequent and not easily decodable in an instructional unit of post-1990 basal/literature text, 169 appear only once.

A 50-word excerpt representing each of the four text types is presented in the first four columns of Table 3. These excerpts illustrate several of the patterns identified above. Of the 37

_____

Insert Table 3 about here

_____

unique words in the post-1990 basal/literature excerpt (column 4 in Table 3), 12 are critical

words. Of these 12 critical words, five appeared again in the individual text from which the

excerpt was taken but not in other texts of the instructional unit. The other seven critical words

(e.g., *acknowledgment* and *rumbling*) were not repeated in either this text or the entire

instructional unit.

The excerpts from pre-1990 basal, skill builder, and HI/LV texts contained a total of

seven critical words, and three of these words (*hobby/ies, collect/ing*, and *village*) were repeated

several times in these 50-word excerpts. Although three critical words (*Baker*, *whiteness,* and

Mexico) were not repeated in the text or the instructional unit, they did not occur in sentences

that contained other critical words. Furthermore, two of the singletons (*Baker* and *whiteness*)

have base words that readers could be expected to know.

<u>Discussion of Text Types</u>

This study has demonstrated that texts used in successful fluency interventions had

several features that distinguish them from the literature that now constitutes basal textbook

programs. Literature texts in the new basals typically have 35 new, unique words in every 100

words of running text, while controlled vocabulary texts have around 25. This smaller number of

unique words in controlled texts means more intra- and intertext repetition of words than in

literature texts. That is, controlled texts manifest the higher level of shared words that Rashotte

and Torgesen (1985) identified as a factor in improving fluency among struggling readers.

Further, controlled vocabulary texts, compared to literature texts, contain a higher percentage of

high-frequency words or easily decodable words and thereby increase practice with a large

number of words that students are expected to read in content area texts in the middle grades and

high school (Carroll et al., 1971; Zeno et al., 1995).

On all word-level measures, literature texts compared to controlled texts have "more"—more unique words per 100, more critical or hard words, and more singletons. Researchers and teachers who have read with struggling readers in texts with many critical words know how tedious the experience can be for students. The relatively high proportion of critical words and singletons in literature texts is unlikely to support smooth, facile reading of the grade-level words. This analysis of text types suggests that students need more than guided, repeated reading opportunities if fluency patterns are to be improved. In addition to appropriate instruction, students could benefit from improved text design. This may be especially relevant for beginning and struggling readers. The addition of children's literature to the elementary reading curriculum has been an important and desirable development. At the same time, it may be inappropriate to put the burden for all reading outcomes on literature.

Study B: The Design and Implementation of Research-Based Texts

As a result of the conclusions of the NRP, mandates for increased fluency instruction and practice can be expected (see, e.g., California Reading and Literature Project, 2001). However, as the review of the texts in the NRP database showed, the findings have been achieved using texts with controlled vocabularies. The response, we argue, is not to return to the controlled texts of the 1960s. Bruce (1984), among others, identified problems with these texts such as their lack of engagingness and coherency that, two decades later, are likely to be even more glaring with a new generation of children. However, research since the heyday of readability formulas suggests several ways to design texts that support particular reader processes and thereby benefit struggling readers.

The second study reported on here describes the design and implementation of a new type of text called QuickReads. QuickReads texts combine features identified by cognitive scientists in recent research with selected features of the controlled texts that were analyzed in Study A. Study B includes a field study of the effects of these texts on student reading fluency, accuracy, and comprehension.

Theoretical and Empirical Basis for Features of Intervention Texts

Three areas of research informed the design of the QuickReads intervention texts: (a) linguistic content, (b) conceptual or subject matter content, and (c) metacognition of reading rate.

Linguistic content refers to knowledge of the systems that underlie written English words. Written English has a grapho-phonic system in which one or more letters represent particular sounds. Making letter-sound correspondences explicit and creating "a set for diversity" to handle words with discrepant letter-sound relationships help young readers acquire linguistic content (Adams, 1990; Snow, Burns, & Griffin, 1998; NRP, 2000). When texts and instructional lessons contain the same linguistic content, children's proficiency in using this content increases (Juel & Roper/Schneider, 1985). The design of the intervention texts incorporated these findings.

Substantial overlap in vocabulary across texts has been shown to benefit poor readers (Faulkner & Levy, 1994; Hiebert & Fisher, 2002; Rashotte & Torgesen, 1985). Written English has a substantial amount of intertext repetition. Sixty-five percent of the total set of words that students read in the middle grades is accounted for by just 300 words (Carroll et al., 1971; Zeno et al., 1995). While this group of words is present in all text types, Study A showed that this core vocabulary represents a larger portion of unique words in controlled texts than in children's literature. Further, when critical or difficult words appeared in controlled texts, they were likely to be repeated. Study A implies that texts designed for fluency enhancement should have few

singletons, and those that do appear should be moderately frequent, phonetically regular words or morphological derivatives of known words (e.g., *hungrier* and *hurtful* rather than *hieroglyphs* and *hibiscus*).

Analysis of the controlled texts used in fluency studies indicated that approximately 85% of the unique words fell within the third-grade curriculum (i.e., the 1,000 most frequent words plus easily decodable monosyllabic words). To ensure high levels of shared vocabulary, the intervention texts were designed to have a minimum of 90% of the unique words fall within the third-grade curriculum. This specification exceeded the average for earlier controlled texts and matched a widely used criterion for the minimum percentage of words to be read accurately without loss of meaning (Betts, 1946; Clay, 1985). Further, the design of the intervention texts specified that critical words (the remaining 10% of unique words) be repeated an average of four times. This rate of repetition has been identified as a threshold for retention of new words (Reitsma, 1988).

Conceptual content, or subject matter knowledge, has been shown to influence interpretations of text (Pearson & Fielding, 1991). Much has been learned about the role of content in reading since the pre-1990 basal and skill builder texts were written. The strong role of background knowledge in comprehension is well documented. In studies of children and adults, Stanovich and his colleagues (Stanovich & Cunningham, 1992; West & Stanovich, 1991) found that amount of reading was strongly correlated with vocabulary knowledge, verbal fluency, spelling, knowledge of general information, and knowledge of history and literature.

Informational texts may have a critical role in generating new knowledge. Bernhardt, Destino, Kamil, and Rodriguez-Munoz (1995) found that quantity of informational text reading was correlated with science achievement, while reading narrative texts was not. Unfortunately,

only a tiny portion of texts in primary-grade classrooms is informational (Duke, 2000). There is

some evidence that when informational text reading is a focus of instruction, students' facility

with new knowledge domains increases. Students who studied a variety of life science trade texts

(but not a traditional textbook) in an intervention performed better than a comparison group

(textbook only) on a new science topic (Guthrie, Anderson, Alao, & Rinehart, 1999). As early as

kindergarten, many children express a preference for informational over narrative texts (Pappas,

1993).

This research suggests that fluency practice with informational text could increase

background knowledge and increase engagement. Consequently, informational text was selected

as the content of the intervention texts. Developing texts on important science and social studies

topics (National Research Council, 1996; Schneider et al., 1994) may allow students to receive

additional knowledge benefits while practicing fluency.

Metacognition of reading rate has not been a significant part of the recent research on

metacognitive processes related to reading. Nonetheless, knowing that one can vary one's

reading rate and purpose for reading seems to be part of the control that good readers exercise

over their reading processes (Baker & Brown, 1984). Shared vocabulary and other design

elements of the intervention texts are intended to make reading smoother and faster but, for some

students who have spent several years reading slowly, additional supports may be needed. One

technique, commonly used in repeated reading, uses graphs on which students record their

reading speed (Samuels, 1979). Instructional conversations during which teachers talk with

students about different purposes and speeds of reading also have empirical support

(Goldenberg, 1992).

The review of research on fluency produced no studies where text length or other information was used to promote awareness of reading rate. Use of particular reading speeds as benchmarks for grade levels has become common in efforts such as California's RESULTS program (California Reading and Literature Project, 2001). Hasbrouck and Tindal (1992) identified norms for reading speeds at the beginning, middle, and end of grades 2–5. At the middle of grade 3, students at the 25th percentile read 70 words per minute (wpm), while those at the 50th percentile read 93 wpm. At the end of grade 3, reading speed for the 25th and 50th percentiles were 87 and 114 wpm, respectively. The intervention texts were intended to be read in about one minute, and since the field study was conducted in the final half of the school year, text length was specified at approximately 100 words. The intervention procedure used a variety of cues to make students aware of their reading speed.

Study Design

The primary purpose of the study was to assess the impact of the QuickReads intervention on student reading performance. A second concern involved the possibility of differential effects on native English speakers and English language learners (ELLs). In the current study, ELLs are represented by students whose first language is Spanish. From data collected as part of the National Assessment of Educational Progress in 2000, 71% of fourth-grade native English speakers were at basic level of reading competence or above, while 42% of Hispanic fourth-graders achieved this level (Donahue, Finnegan, Lutkus, Allen, & Campbell, 2001). Although previous fluency studies have not examined language background, it is possible that reading fluency may develop differently for English speakers compared to first language Spanish speakers. To examine both intervention and language background effects, a two-factor crossed design was used. Group membership (intervention or comparison) constituted one factor

and language background (native English speaker or ELL) the other. Reading speed, accuracy, and comprehension were assessed both before and after the intervention with the post measures serving as dependent variables and the pre measures serving as covariates.

Method

Sample. The study was conducted in schools from one county in northern California. The county was chosen for two reasons. First, many teachers in the county participated in the California Reading and Literature Project (CRLP; 2001) whose focus during the year in which this study was conducted was on assessment and instruction of speed and accuracy in oral reading. The CRLP teachers were provided with assessments to facilitate their understanding of reading fluency and instructional activities to support fluency development. Second, this county has a substantial population of Spanish-speaking students. The county includes extensive agricultural businesses employing farm workers, many of whom are first- or second-generation immigrants. This population made it possible to examine the efficacy of the intervention with students from different language backgrounds.

Instructional coordinators identified teachers who were active participants in the CRLP and assigned them to the intervention and comparison groups. In two districts, intervention and comparison classes were assigned within schools; in the third district, one school was assigned to the intervention group and one school to the comparison group. During the nine-week period of the intervention, teachers in the comparison group continued to support fluency development with materials that were already in place (for example, the Read Naturally program [Ihnot, 1999], among others).

Since the intervention texts were primarily aimed at third graders, instructional coordinators were asked to select third-grade classrooms. However, since two of the three sites

had relatively low levels of reading performance, low performing fourth-grade classes were included at these sites. At the third site, student reading performance was relatively high and, as a result, several high-performing second grades were included in the sample.

The sample included 446 participants; 252 and 194 students in the intervention and comparison groups respectively. On language background, 296 students were native English-language speakers and 155 were English language learners. The sample included 71 second-grade students, 214 third-grade students, and 161 fourth-grade students. Boys and girls were distributed evenly by group, language background, and grade-level.

The QuickReads intervention. Sixty QuickReads texts were written following the principles outlined earlier. Each text was between 95 and 105 words long. Five texts were generated for each of six science and six social science themes.[2] Ten of the themes (totaling 50 texts) were used in the intervention group. The two remaining themes were used for assessment. Key features of the QuickReads texts can be compared with the text types identified in Study A by consulting Table 2.[3] To summarize, QuickReads texts are characterized as follows: an average of 20 unique words occur per running 100 words; 78% of unique words fall within the 1,000 most frequent words; 12% of unique words fall outside the 1,000 most frequent words but are monosyllabic and decodable; 10% of the unique words fall beyond the 1,000 most frequent words and are not easily decodable; and 2% of the unique words are singletons. In addition,

---

[2] The science themes included physical, earth, and life sciences, and the social science themes included history, civics, and geography/economics. Together these themes accounted for a majority of the content in national standards documents (National Research Council, 1996; Schneider et al., 1994).

[3] The QuickReads texts were analyzed in the same way as the four text types in Study A. That is, 230-word samples were taken from 10 consecutive topics. The results in Table 2 indicate that the design conditions for QuickReads were met.

critical words in QuickReads texts were repeated an average of four times. An excerpt from the

QuickReads text entitled *What is sound?* is included in Table 3 (column 5).

The intervention texts were embedded within a brief instructional routine. While texts are

essential determinants of the reading task, texts do not teach children to read. Effective teachers

of struggling readers use clearly defined instructional routines (Pressley, Rankin, & Yokoi,

1996). Three cycles of repeated reading have been shown to sustain student engagement and

increase facility with vocabulary (Homan, Klesius, and Hite, 1993). This structure was adopted

as part of the instructional routine for the intervention. Further, the primary strategies identified

by the NRP for fostering comprehension (i.e., predicting content, identifying critical words prior

to reading, and consistently summarizing content following reading) were integrated into the

instructional routine. Graphic organizers (Sinatra, Stahl-Gemake, & Berg, 1984) have been

shown to help students make connections across texts and retain essential knowledge. The

instructional routine included semantic mapping activities. Cues to raise student awareness of

reading speed in different phases of reading were also incorporated into the instructional routine.

The instructional routine for the intervention was summarized on a laminated card that

was distributed to teachers. Strategies for the "FirstRead" of the instructional routine coached

students on prereading activities (e.g., "Look at the title and think about what the text will be

about. Then scan the text for two words that might be new and challenging"). After a short

discussion about the topic and new and challenging words, students read the passage silently to

"get the important ideas." Following this first reading, students wrote key phrases for the

subtopic on a semantic map for the topic. During the "SecondRead," the teacher read the text

aloud with students following along. The SecondRead was followed by a review of the most

important idea from the passage. On the "ThirdRead," students were advised to read as quickly

as they could. After the ThirdRead, students recorded how many words they read in a minute. Each session concluded with a review of what was important to remember from the passage.

The intervention was introduced to participating teachers in a workshop where the rationale for the intervention, materials, and procedures were presented, modeled, and discussed. Intervention teachers were requested to use the texts with all students in their classes. Daily sessions of 10–15 minutes each were designed to cover one topic (5 texts) per week. Teachers kept logs on their presentation of the QuickReads topics.

Measures. Two of the 12 QuickReads topics (1 social studies and 1 science) were randomly chosen for exclusive use in the pre- and post-assessments. One text from each topic was used for assessment. All participants read this text before and after the intervention. On each occasion, the length of time that a student took to read a text from beginning to end and his or her miscues were recorded. From these data, six variables were derived. These included pre and post fluency measured in words per minute, pre and post error rate measured in errors per minute, and pre and post comprehension scores.

Comprehension scores were derived from students' responses to the question "*Tell me what is important to remember from this text*" and the follow-up prompt "*Is there anything else that is important to remember from this text?*" A 5-point rating scale, modeled on the procedure used for scoring comprehension on the NAEP (Donahue et al., 2001), was developed to score the responses. A score of 0 represented no evidence of text comprehension. Scores from 1 to 4 indicated progressively higher levels of comprehension, with 1 indicating minimal or inaccurate evidence and 4 indicating full comprehension of the text. Two researchers rated a randomly selected sample of pre and post student responses until they achieved an inter-rater agreement of 90%. One of the two researchers then scored half of the protocols. The second rater

independently rated 10% of this group of protocols to ensure that 90% agreement was

maintained. With the agreement level confirmed, the remainder of the protocols were scored.

Total raw scores for the reading vocabulary and comprehension subtests of the

California-mandated 9th edition of the Stanford Assessment Test (SAT-9) were obtained from

schools. The SAT-9 was administered within two weeks of the completion of the intervention.

Results

The primary data analyses examined student performance variables for effects of group

membership (intervention or comparison group) and language background (native English

speakers or English language learners). Data on 446 students from 29 classrooms were pooled in

this 2 X 2 design, and analyses of covariance were conducted. Four dependent variables were

analyzed: fluency, comprehension, error rate, and raw scores for the combined reading

vocabulary and comprehension subtests of the SAT-9. Because the design was unbalanced with

maximum and minimum cell frequencies equal to 168 and 57, each dependent variable was

analyzed separately. Where analyses varied from this general approach or there were special

statistical concerns, additional information is included with that analysis. In addition to the

univariate analyses of covariance presented here, analogous analyses of covariance of difference

scores and multivariate analysis of variance and covariance on the post measures were also

conducted. There were no substantial differences among these analyses.

Where educationally important effects were identified, secondary descriptive analysis

were undertaken to explore the strength of the effect for groups of students differing in level of

performance at the beginning of the intervention. In such cases, the sample was divided into

quartiles on the relevant pre measure and means were plotted for the dependent variable.

Results for the four dependent variables are presented in two subsections. The first subsection includes reading fluency, comprehension, and error rate. Each of these variables was assessed before and after the intervention. The fourth dependent variable, raw score on the reading section of the SAT-9, was assessed on one occasion after the intervention and is treated in the second subsection.

Reading fluency, comprehension, and error rate. Descriptive statistics for fluency, comprehension, and error rate are presented in Table 4 for each cell in the 2 X 2 design, consisting of group membership (intervention and comparison) and language background (native English speakers and English language learners). An analysis of covariance was run on each of the post measures with all three pre measures serving as covariates.

Table 4 about here

In the analysis of reading fluency, a strong effect for group $(F (1, 439) = 20.6 (p < .001))$ was found favoring the intervention group over the comparison group. There was no significant difference for language background and no interaction between group and language background.

In the analysis of reading comprehension, no effect for group was found. There was a significant effect for language background $(F (1, 439) = 5.0 (p = .025))$ favoring native English speakers. There was no interaction between group and language background.

In the analysis of error rate, no effect for group was found. There was a significant effect for language background $(F (1, 439) = 4.4 (p = .036))$ favoring native English speakers. There was no interaction between group and language background. The error rate measure was very highly skewed with relatively small variance. In an effort to reduce the distributional asymmetry,

the variable was dichotomized and reanalyzed. Analysis of the dichotomized variable yielded no significant results.

The strongest effect identified in these three sets of analysis was for the intervention group over the comparison group on reading fluency. Means on the post-fluency measure by quartile groups formed on the pre-fluency measure were: 82.4, 109.6, 132.6, and 161.1 words per minute for the intervention group and 73.2, 102.9, 125.8, and 144.0 words per minute for the comparison group. Since the intervention group, compared to the comparison group, scored higher on post-fluency in each quartile, it appears that the fluency effect was approximately evenly spread over the range of beginning fluency scores.

Figure 1 presents fluency gain scores (post-fluency minus pre-fluency) for the same quartile groups. This figure provides an alternative view of how the group effect was distributed over the range of pre-fluency scores. The average gains for the first (lowest) through fourth quartiles in the intervention group were 34.2, 26.8, 24.8, and 15.5 words per minute, respectively. Analogous gains for the comparison group were 26.2, 18.3, 17.4, and 0.9 words per minute. The average gains in the intervention and comparison groups were 25.4 and 15.8, respectively.

Figure 1 about here

Raw reading scores from the SAT-9. In analyses of the SAT-9 data, the three pre measures used in the earlier analyses (pre-fluency, pre-comprehension, and pre-error rate) were used as covariates. Since the specific items and numbers of items forming the raw reading scores on the SAT-9 differed for grades 2, 3, and 4, the raw scores were not directly comparable across

grades. As a result, separate analyses were conducted for each grade. Descriptive statistics for raw reading scores from the SAT-9 are presented in Table 5 for group and language background by grade.

Table 5 about here

Results of the analyses of covariance were similar at each of the three grade levels. At each grade level, there was no significant difference between intervention and comparison groups. There were significant effects for language background favoring native English speakers (for grade 2: $F (1, 64) = 5.5$ (p = .02); for grade 3: $F (1, 205) = 7.0$ (p < .01); and for grade 4: $F (1, 148) = 14.7$ (p < .001)). There were no significant interactions between group and language background.

Summary of results. The analyses of covariance identified a strong consistent effect on reading fluency favoring the intervention group over the comparison group regardless of language background. On average, students in the intervention group gained 9.6 words per minute more than students in the comparison group over the nine-week intervention. When post-fluency scores were plotted for quartile groups on pre-fluency, the advantage for the intervention group over the comparison group was demonstrated in all quartiles. There were no significant differences between the intervention and comparison groups on comprehension, error rate, or raw reading scores from the SAT-9. On each of these variables there was a significant effect favoring native English speakers over English language learners.

Discussion

The QuickReads intervention had an educationally important impact on student reading fluency. The effect was identified in every analysis even though the comparison group had a slight advantage on fluency at the beginning of the study. Students in the comparison group gained 15.8 words per minute during the nine-week study but the intervention group gained 25.4 words per minute—an increase of 61% over the comparison group. Native English speaking students and English language learners benefited equally from the intervention. In addition, the intervention's effect on fluency was distributed over the range of scores on fluency when the study started. Although students with the lowest scores on fluency at the beginning of the study made the largest gains and students with the highest pre scores made the lowest gains, the average gain for each quartile group on the fluency pre measure was substantial.

The reading performances of ELL students have generally lagged behind those of native English speakers (Donahue et al., 2001), a situation which is exacerbated as literacy tasks increasingly involve informational texts. At the beginning and end of this study, ELL students read more slowly than their native-English-speaking peers but the average gains made by ELL students were slightly greater. Future studies need to determine the potential of fluency interventions to aid ELLs, whether through in-school, after-school, or summer programs, in stopping the typical loss of fluency that students show from spring of one grade to the fall of the subsequent grade (Hasbrouck & Tindal, 1992).

One hundred and thirty words per minute by the end of fourth grade is a benchmark for reading fluency (Pinnell et al., 1995). For students in the top two quartiles, especially at the fourth-grade level, the intervention meant that more students attained the benchmark. As part of the analysis of the 1994 NAEP data, Pinnell et al. (1995) reported that 39% of fourth graders

attained the benchmark while 61% did not. At the end of the current study, fourth graders in the comparison group exhibited the same profile (38% reached the benchmark and 62% did not). Fourth graders in the intervention group had a somewhat different profile by the end of the study (51% reached the benchmark while 49% did not). Although there is plenty of room for improvement, this result is a substantial step in the right direction. For students whose performance on reading fluency is relatively close to the benchmark, short periods of repeated reading with appropriate text may help them move from basic to proficient reading levels. Results for session lengths and frequencies are yet to be determined.

A more critical question concerns the relative payoff of more refined tailoring of text characteristics to profiles of reading performance. The current study developed a set of design specifications for texts and generated intervention texts using the best available theoretical and empirical information. The intervention texts yielded desirable results. However, it is quite possible that varying the parameters in the model might provide even better results or that specific groups of students might benefit from variations on the text model underlying the intervention texts. If interventions were sustained over substantially longer periods than nine weeks, it may be more effective to gradually increase the overall text difficulty as student fluency performance improves. Texts with increasing numbers of critical words have been developed and will be examined in subsequent research.

Although we often speak of fluency and other literacy benchmarks, it is often the large-scale assessment programs that set the bar for both students and teachers. In this context, it will continue to be useful to analyze the text characteristics of assessment instruments so that a reasonable match can be made between the texts in these instruments and the expectations set for students during classroom literacy instruction. Most testing situations are also reading tests

regardless of the subject matter content of the test. This fact is especially germane for beginning and struggling readers. Fluency interventions will not appear to make a difference if the terminal reading performance is assessed with materials that are discrepant from the model underlying the intervention. That is, an improvement in fluency of 26 words per minute achieved in nine weeks on texts with 10 hard words per 100 running words is unlikely to show up if students are tested on texts with 25 hard words per 100 running words (15 of which are singletons) one week after the intervention.

The intervention and comparison groups did not differ significantly on student error rates. Although error rates in Study B were generally very low, this finding mirrored results from the 1994 NAEP data (Pinnell et al., 1995). It appears that the vast majority of students, even second graders, recognize high-frequency words and less frequent, monosyllabic words that are easily decodable. However, for a sizable group of students, recognizing these words is not a very rapid process. When students have increased exposure to texts like those in the intervention, they become more fluent with an important corpus of core words. Changes in error rates were not significant because most students could recognize the words, even before the intervention. The opportunity to read texts where these core words are repeated gives students experiences that are not afforded by typical instructional texts, even those intended to introduce children to reading (Foorman et al., 2002). By asking students to practice on texts with relatively high proportions of critical or hard words (i.e., post-1990 basal/literature texts), educators may unnecessarily delay their students' fluency with the words that will account for the bulk of texts throughout students' school careers.

Although no significant differences were found between the intervention and comparison groups on comprehension measures, the post measure of comprehension was positively

correlated with the post measure of fluency and the strength of this coefficient was greater that that of any other variable with comprehension. There may be several explanations for the relative weakness of the empirical relationship between comprehension and fluency. Unfortunately, this is not an uncommon finding among relatively short-term intervention studies (see, e.g., Rashotte & Torgesen, 1985). One explanation points to the insensitivity of comprehension measures to an initial fluency intervention. The two measures of comprehension in this study—ratings of an oral summary following oral reading and the raw reading subtest of the SAT-9 may not have detected changes in students' engagement, interest in reading, ease with informational text, or development of background knowledge.

English language learners, who made up a third of the sample, may have been at a disadvantage during the pre and post comprehension assessments. Summarizing a text orally requires productive language capacities that may not have developed as fully as their receptive language capacities. Further, norm-referenced tests like the SAT-9 are designed to assess comprehension and vocabulary, but performance is likely to be affected by reading speed. For slower readers, these tests may well assess reading speed to a greater degree than comprehension and vocabulary (García & Pearson, 1994). Some children in the study were performing at very low levels of fluency, despite the substantial progress they made during the intervention. There may be what amounts to a fluency threshold below which gains in comprehension are difficult to detect or nonexistent. Future studies of fluency would benefit from both clearer frameworks for describing and understanding the relationships among fluency, accuracy, and comprehension and more sensitive assessment procedures.

References

Adams, M. J. (1990). <u>Beginning to read: Thinking and learning about print.</u> Cambridge: MIT Press.

Baker, L., & Brown, A. L. (1984). Metacognitive skills and reading. In P. D. Pearson, M. Kamil, R. Barr, & P. Mosenthal (Eds.), <u>Handbook of research in reading</u> (pp. 353–395). New York: Longman.

Baumann, J. F., Hoffman, J. V., Duffy-Hester, A. M., & Ro, J. M. (2000). The first R yesterday and today: U.S. elementary reading instruction practices. <u>Reading Research Quarterly, 35</u> (3), 338–377.

Bernhardt, E., Destino, T., Kamil, M., & Rodriguez-Munoz, M. (1995). Assessing science knowledge in an English/Spanish bilingual elementary school. <u>Cognosos, 4</u> (1), 4–6.

Betts, E. (1946). <u>Foundations of reading instruction</u>. New York: American Book.

Blum, I. H., Koskinen, P. S., Tennant, N., Parker, E. M., Straub, M., & Curry, C. (1995). Using audiotaped books to extend classroom literacy instruction into the homes of second-language learners. <u>Journal of Reading Behavior, 27</u>, 535–563.

Boning, R. A. (1997). <u>Getting the facts</u> (Book C of <u>Specific Skills Series,</u> 5th ed.). Columbus, OH: SRA-McGraw-Hill. (Original work published 1963)

Bruce, B. C. (1984). A new point of view on children's stories. In R. C. Anderson, J. Osborn, & R. J. Tierney (Eds.), <u>Learning to reading in American schools: Basal readers and content texts</u> (pp. 153–174). Hillsdale, NJ: Erlbaum.

Bush, G. W. (2001, January 29). <u>No child left behind</u> (Education Policy of the U.S. President) [On-line]. Available http://www.ed.gov/inits/nclb/index.html.

California English/Language Arts Committee. (1987). <u>English-language arts framework for</u>

California public schools (kindergarten through grade twelve). Sacramento: California Department of Education.

California English/Language Arts Committee. (1999). English-language arts content standards for California public schools (kindergarten through grade twelve). Sacramento: California Department of Education.

California Reading and Literature Project. (2001). Kindergarten-sixth grade reading RESULTS assessment manual 2001–2002. La Jolla, CA: Author.

Carroll, J. B., Davies, P., & Richman, B. (1971). Word frequency book. Boston: Houghton Mifflin.

Chall, J. S. (1983). Learning to read: The great debate (3rd ed.). Fort Worth, TX: Harcourt Brace. (Original work published 1967)

Chall, J. S., Jacobs, V. A., & Baldwin, L. E. (1990). The reading crisis: Why poor children fall behind. Cambridge, MA: Harvard University Press.

Clay, M. M. (1985). The early detection of reading difficulties (3rd ed.). Portsmouth, NH: Heinemann.

Cooper, J. D., Pikulski, J. J., Au, K. H., Calderon, M., Comas, J. C., Lipson, M. Y., Mims, J. S., Page, S. E., Valencia, S. W., & Vogt, M. E. (2001). Invitations to literacy. Boston: Houston Mifflin Company.

Donahue, P. L., Finnegan, R. J., Lutkus, A. D., Allen, N. L., & Campbell, J. R. (2001). The nation's report card for reading: Fourth grade. Washington, DC: National Center for Education Statistics.

Dowhower, S. L. (1987). Effects of repeated reading on second-grade transitional readers' fluency and comprehension. Reading Research Quarterly, 22, 389–406.

Duke, N. K. (2000). 3.6 minutes per day: The scarcity of informational texts in first grade. Reading Research Quarterly, 35, 202–224.

Eldredge, J. L. (1990). Increasing the performance of poor readers in the third grade with a group-assisted strategy. Journal of Educational Research, 84, 69–77.

Eldredge, J. L., Reutzel, D. R., & Hollingsworth, P. M. (1996). Comparing the effectiveness of two oral reading practices: Round-robin reading and the shared book experience. Journal of Literacy Research, 28, 201–225.

Faulkner, H. J., & Levy, B. A. (1994). Fluent and nonfluent forms of transfer in reading: Words and their message. Psychonomic Bulletin and Review, 6, 111–116.

Foorman, B. R., Francis, D. J., Davidson, K. C., Harm, M. W., & Griffin, J. (2002, April). Variability in text features in six grade 1 basal reading programs. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

García, G. E., & Pearson, P. D. (1994). Assessment and diversity. In L. Darling-Hammond (Ed.), Review of Research in Education (Vol. 20, pp. 337–392). Washington, DC: American Educational Research Association.

Goldenberg, C. (1992). Instructional conversations: Promoting comprehension through discussion. The Reading Teacher, 46, 316–326.

Guthrie, J. T., Anderson, E., Alao, S., & Rinehart, J. (1999). Influences of concept-oriented reading instruction on strategy use and conceptual learning from text. Elementary School Journal, 99, 343–366.

Hasbrouck, J. E., & Tindal, G. (1992). Curriculum-based oral reading fluency norms for students in grades 2 through 5. Teaching Exceptional Children, 24 (3), 41–44.

Hayes, D. P., Wolfer, L. T., & Wolfe, M. F. (1996). Schoolbook simplification and its relation to the decline in SAT-verbal scores. <u>American Educational Research Journal</u>, <u>33</u>, 489–508.

Heckleman, R. G. (1966). Using the neurological impress remedial reading technique. <u>Academic Therapy Quarterly</u>, <u>1</u>, 235–239.

Herman, P. A. (1985). The effect of repeated readings on reading rate, speech pauses, and word recognition accuracy. <u>Reading Research Quarterly</u>, <u>20</u>, 553–565.

Hiebert, E. H. (2001, April). Pace and repetition: The forgotten variables in the design of beginning reading programs. Paper presented as part of the symposium <u>Texts that support beginning reading acquisition: What we know and how we know it</u> at the annual meeting of the American Educational Research Association, Seattle, WA.

Hiebert, E. H. (2002). Standards, assessment, and text difficulty. In A. E. Farstrup & S. J. Samuels (Eds.), <u>What research has to say about reading instruction</u> (3rd ed., pp. 337–369). Newark, DE: International Reading Association.

Hiebert, E. H., & Fisher, C. W. (2002, April 4). <u>The critical word factor in texts for beginning readers: Effects on reading speed, accuracy, and comprehension.</u> Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Hiebert, E. H., & Martin, L. A. (2002). <u>TExT (Task Elements by Task) software</u> (3rd ed.). Santa Cruz, CA: TextProject.

Hoffman, J. V., McCarthey, S. J., Abbott, J., Christian, C., Corman, L., Dressman, M., Elliot, B., Matherne, D., & Stahle, D. (1994). So what's new in the "new" basals? A focus on first grade. <u>Journal of Reading Behavior</u>, <u>26</u>, 47–73.

Homan, S. P., Klesius, J. P., & Hite, C. (1993). Effects of repeated readings and nonrepetitive strategies on students' fluency and comprehension. Journal of Educational Research, 87, 94–99.

Ihnot, C. (1999). Read naturally (Reading level 3.0). St. Paul, MN: Read Naturally.

Juel, C., & Roper/Schneider, D. (1985). The influence of basal readers on first-grade reading. Reading Research Quarterly, 20 (2), 134–152.

McKee, P., Harrison, M. L, McCowen, A., Lehr, E., & Durr, W. K. (1966). Climbing higher (Vol. 3.2 of Reading for Meaning, 4th ed.). Boston: Houghton Mifflin Company.

Miller A., Robson, D., & Bushell, R. (1986). Parental participation in paired reading: A controlled study. Educational Psychology, 6, 277–284.

Minarik, E. (1957). Little bear. New York: HarperTrophy.

National Reading Panel. (2000). Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction. Washington, DC: National Institute of Child Health and Human Development.

National Research Council. (1996). National science education standards. Washington, DC: National Academy Press.

Pappas, C. (1993). Is narrative "primary"? Some insights from kindergartners' pretend readings of stories and information books. Journal of Reading Behavior, 25, 97–129.

Pearson, P. D., & Fielding, L. (1991). Comprehension instruction. In R. Barr, M. L. Kamil, P. B. Mosenthal, & P. D. Pearson (Eds.), Handbook of reading research (Vol. 2, pp. 815–860).

Pinnell, G. S., Pikulski, J. J., Wixson, K. K., Campbell, J. R., Gough, P. B., & Beatty, A. S. (1995). Listening to children read aloud: Data from NAEP's integrated reading performance

record (IRPR) at grade 4. Washington, DC: Office of Educational Research and Improvement, U.S. Department of Education; Princeton, NJ: Educational Testing Service.

Pressley, M., Rankin, J., & Yokoi, L. (1996). A survey of instructional practices of primary grade teachers nominated as effective in promoting literacy. Elementary School Journal, 96, 363–384.

Rashotte, C., & Torgesen, J. K. (1985). Repeated reading and reading fluency in learning disabled children. Reading Research Quarterly, 20, 180–188.

Reitsma, P. (1988). Reading practice for beginners: Effects of guided reading, reading-while-listening, and independent reading with computer-based speech feedback. Reading Research Quarterly, 23, 219–235.

Samuels, S. J. (1979). The method of repeated readings. The Reading Teacher, 32, 403–408.

Schneider, D., Adler, S. A., Beery, R., Ladson-Billings, G., Fernekes, W. R., Hartoonian, M., McFarland, M. A., Marker, G., Montgomery, M. A., Nickell, P., & Tevis, C. (1994). Expectations of excellence: Curriculum standards for social studies. Waldorf, MD: National Council for the Social Studies.

Seuss, Dr. (1960). Green eggs and ham. New York: Random House.

Shany, M. T., & Biemiller, A. (1995). Assisted reading practice: Effects on performance for poor readers in grades 3 and 4. Reading Research Quarterly, 30, 382–395.

Sinatra, R. C., Stahl-Gemake, J., & Berg, D. N. (1984). Improving reading comprehension of disabled readers through semantic mapping. Reading Teacher, 38, 22–29.

Smith, D. D. (1979). The improvement of children's oral reading through the use of teacher modeling. Journal of Learning Disabilities, 12, 39–42.

Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). <u>Preventing reading difficulties in young children</u>. Washington, DC: National Academy Press.

Stanovich, K. E., & Cunningham, A. E. (1992). Studying the consequences of literacy within a literate society: The cognitive correlates of print exposure. <u>Memory and Cognition</u>, <u>20</u>, 51–68.

Texas Education Agency. (1990). <u>Proclamation of the State Board of Education advertising for bids on textbooks</u>. Austin, TX: Author.

Texas Education Agency. (1997). <u>Proclamation of the State Board of Education advertising for bids on textbooks</u>. Austin, TX: Author.

West, R. F., & Stanovich, K. E. (1991). The incidental acquisition of information from reading. <u>Psychological Science</u>, <u>2</u>, 325–330.

Zeno, S. M., Ivens, S. H., Millard, R. T., & Duvvuri, R. (1995). <u>The educator's word frequency guide</u>. New York: Touchstone Applied Science Associates, Inc.

Table 1. Types of Text Used in Fluency Studies Reviewed by the NRP

Text Type	Study[1]
Pre-1990 basal text	•Carver & Hoffman (1981) •Dowhower (1987) •Faulkner & Levy (1994) •Gilbert et al. (1996) •Homan et al. (1993) •Hollingsworth (1970)* •Kamps et al. (1994) •Labbo & Teale[2] (1990) •Law & Kratochwill (1993) •Levy et al. (1993) •Lorenz & Vockrell (1979) •Mathes & Fuchs (1993)* •Neill (1979) •Rasinski (1990) •Rasinski et al. (1994)* •Reitsma (1988) •Shany & Biemiller (1995)* •Simmons et al. (1994)* •Simmons et al. (1995)* •Smith (1979) •Tingstrom et al. (1995) •Weinstein & Cooke (1992) •Young et al. (1996)*
Skill builder text (examples include Barnell Loft Multiple or Specific Skill Series and Reader's Digest Skill Builders)	•Herman (1985) •Langford et al. (1974) •O'Shea et al. (1985) •Pany & McCoy (1988) •Rashotte & Torgesen (1985) •Rose & Beattie (1986) •Sindelar et al. (1990) •Stoddard et al. (1993) •Taylor et al. (1985)
High-interest/low-vocabulary stories (for example, the *I can read* series)	•Conte & Humphreys (1989)* •Hollingsworth (1978)* •Mefferd & Pettegrew (1997) •Rose (1984)
Post-1990 basal text/literature (including predictable and little books)	•Blum et al. (1995) •Dixon-Krauss (1995) •Eldredge (1990)* •Eldredge et al.[3] (1996)* •Labbo & Teale[2] (1990) •Lindsay et al. (1985) •Miller et al. (1986)* •Turpie & Paratore (1995) •Winter (1988)
Unspecified texts	•van Bon et al. (1991) •vanWagenen et al. (1994)

[1] See Appendix A for full references.

[2] Labbo and Teale had different groups read from different types of texts. As a result this study is listed in the table twice.

[3] National Reading Panel lists Reutzel & Hollingsworth (1993) and Eldredge, Reutzel & Hollingsworth (1996) separately. Since the latter paper included the results of the former, only the latter study is listed in the table.

*Used in meta-analysis

Note: Percentages derived from the table used 45 as a denominator (see footnotes 1 and 2 for further clarification).

Table 2. Features of Text Types Analyzed in Studies A and B

	Text types	Total unique words in instruct-ional unit	Average number unique words per 100 running words	Percent unique words within 1,000 most-frequent words	Percent unique words beyond 1,000 that are mono-syllabic & decodable	Percent unique words beyond 1,000 that are difficult to decode	Single-tons[1]
Study A texts	Pre-1990 basal	623	27	75	11	13 (2.2)[2]	7
	Skill builder	552	24	73	11	16 (2.0)	11
	HI/LV	598	26	68	17	15 (2.0)	10
	Post-1990 basal/literature	805	35	60	12	28 (1.6)	21
Study B texts	QuickReads	460	20	78	12	10 (4.2)	2

---

[1] Percent unique words beyond the 1000 most frequent words that are difficult to decode and appear only once in the instructional unit.

[2] Figures in parenthesis are average repetitions per word over the instructional unit for words in this column.

Table 3. Fifty-Word Excerpts From Text Types Analyzed in Studies A and B

Study A texts				Study B texts
Pre-1990 basal	Skill builder	High-interest/ low-vocabulary	Post-1990 basal/ literature	QuickReads
TIM'S WOODS It had snowed in the night. Tim **Baker**[1] could tell that it had without looking out of his bedroom window. There was always a bright **whiteness** about the daylight when the world was deep in snow. Tim lay in bed and thought about what he would do.	A ***HOBBY***[2] FOR YOU Why don't you start a hobby? There are many hobbies that you can enjoy. One of the best is a ***collecting*** hobby. People collect many things. Rocks are fun to collect. You don't have to go very far to find them. Very often they can be found right under your feet.	HILL OF FIRE Once there was a farmer who lived in **Mexico**. He lived in a little *village*, in a house which had only one room. The farmer was not happy. "Nothing ever happens," he said. The people in the village thought the farmer was ***foolish***. "We have everything we need," they said.	***HALMONI*** AND THE ***PICNIC*** Hand in hand, ***Yunmi*** and her ***grandmother***, Halmoni, walked toward St**. Patrick's Elementary** School. **Taxi** cabs **darted** between the big buses **rumbling** down busy **Fourteenth** Street. Yunmi squeezed Halmoni's hand and smiled. Halmoni ***nodded*** in **acknowledgment**, but kept her eyes on the street without smiling.	WHAT IS SOUND? A dog barks. A bell rings. When these things happen, you hear sounds. When someone or something makes ***movements***, sound waves move through the air. A book that falls from a desk to the floor makes more movements in the air than a paper does. The book

---

[1] Boldface type indicates words beyond the 1,000 most frequent words that are difficult to decode and appeared only once in the instructional unit of 10 230-word texts (i.e., singletons).

[2] Italic boldface type indicates words beyond the 1,000 most frequent words that are difficult to decode and appeared more than once in the instructional unit of 10 230-word texts.

Table 4. Descriptive Statistics for Fluency, Comprehension, and Error Rate by Group and Language Background

			Pretest Fluency (wpm)	Posttest Fluency (wpm)	Pretest Compre-hension	Posttest Compre-hension	Pretest Errors /min.	Posttest Errors /min.
Intervention	English	Mean	103	128	2.9	3.4	1.6	1.0
		Std Dev.	38	38	1.3	1.2	2.0	1.3
		N=168						
	ELL	Mean	79	106	2.1	2.7	2.9	1.6
		Std Dev.	36	38	1.2	1.1	2.6	2.0
		N=84						
	Group Total	Mean	95	121	2.6	3.1	2.0	1.2
		Std Dev.	39	39	1.3	1.2	2.3	1.6
		N=252						
Comparison	English	Mean	101	117	2.9	3.3	1.8	0.8
		Std Dev.	38	33	1.5	1.4	2.2	1.1
		N=137						
	ELL	Mean	86	103	2.4	2.9	1.9	1.3
		Std Dev.	31	32	1.1	1.1	1.9	1.4
		N=57						
	Group Total	Mean	97	113	2.7	3.2	1.8	1.0
		Std Dev.	36	33	1.4	1.3	2.1	1.2
		N=194						
Table Total		Mean	96	117	2.7	3.2	1.9	1.1
		Std Dev.	38	37	1.4	1.3	2.2	1.4
		N=446						

Table 5. Descriptive Statistics for Raw Reading Score on SAT-9 by Grade, Group, and Language Background

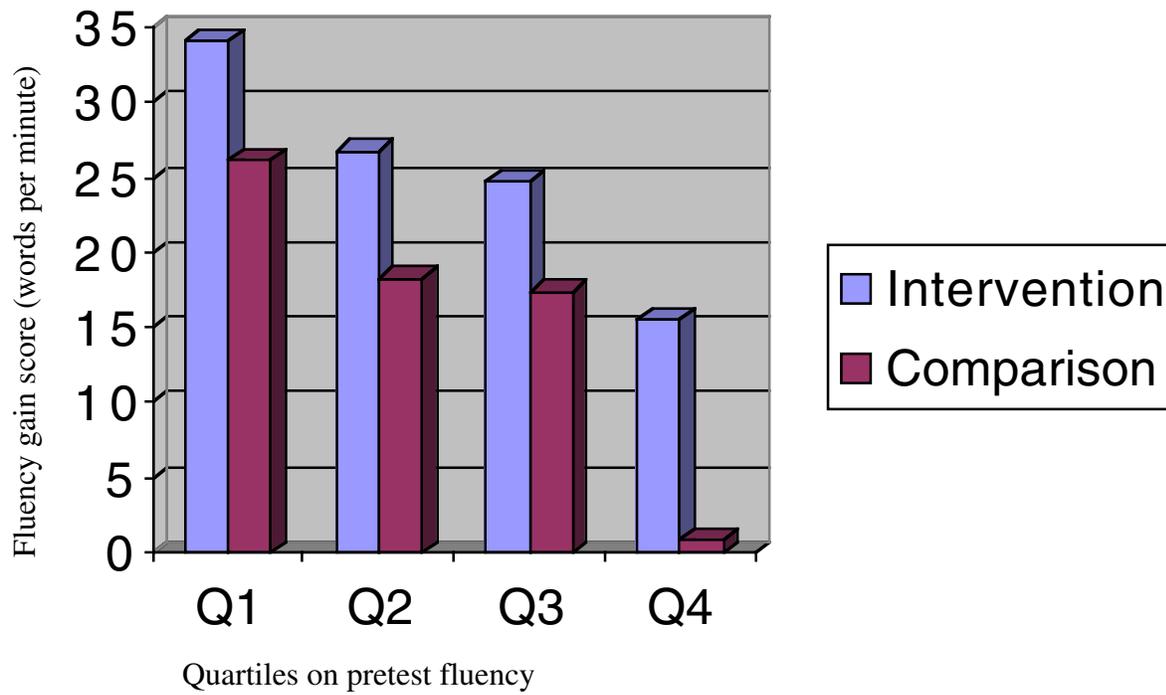|			Sat-9 raw score		
			Mean	Std Dev.	N
Grade 2	Intervention	English	88.8	17.7	28
		ELL	63.3	24.8	9
	Comparison	English	86.0	17.7	30
		ELL	70.5	7.4	4
Grade 3	Intervention	English	58.4	15.4	82
		ELL	45.9	12.8	38
	Comparison	English	60.5	17.9	66
		ELL	48.2	13.0	26
Grade 4	Intervention	English	56.4	14.9	58
		ELL	45.4	16.5	33
	Comparison	English	56.7	13.7	40
		ELL	39.3	12.6	24
Table Total			58.6	20.2	438

Figure 1. Fluency gain scores by group and quartile on pretest fluency.

Appendix A: References for Fluency Findings from National Reading Panel

Blum, I. H., Koskinen, P. S., Tennant, N., Parker, E. M., Straub, M., & Curry, C. (1995).

Using audiotaped books to extend classroom literacy instruction into the homes of second-

language learners. Journal of Reading Behavior, 27, 535–563.

Carver, R. P., & Hoffman, J. V. (1981). The effect of practice through repeated reading

on gain in reading ability using a computer-based instructional system. Reading Research

Quarterly, 3, 374–390.

Conte, R., & Humphreys, R. (1989). Repeated readings using audiotaped material

enhances oral reading in children with reading difficulties. Journal of Communications

Disorders, 22, 65–79.

Dixon-Krauss, L. A. (1995). Partner reading and writing: Peer social dialogue and the

zone of proximal development. Journal of Reading Behavior, 27, 45–63.

Dowhower, S. L. (1987). Effects of repeated reading on second-grade transitional

readers' fluency and comprehension. Reading Research Quarterly, 22, 389–406.

Eldredge, J. L. (1990). Increasing the performance of poor readers in the third grade with

a group-assisted strategy. Journal of Educational Research, 84, 69–77.

Eldredge, J. L., Reutzel, D. R., & Hollingsworth, P. M. (1996). Comparing the

effectiveness of two oral reading practices: Round-robin reading and the shared book experience.

Journal of Literacy Research, 28, 201–225.

Faulkner, H. J., & Levy, B. A. (1994). Fluent and nonfluent forms of transfer in reading: Words and their message. Psychonomic Bulletin and Review, 6, 111–116.

Gilbert, L. M., Williams, R. L, & McLaughlin, T. F. (1996). Use of assisted reading to increase correct reading rates and decrease error rates of students with learning disabilities. Journal of Applied Behavior Analysis, 27, 255–257.

Herman, P. A. (1985). The effect of repeated readings on reading rate, speech pauses, and word recognition accuracy. Reading Research Quarterly, 20, 553–565.

Hollingsworth, P. M. (1970). An experiment with the impress method of teaching reading. Reading Teacher, 43, 362–369.

Hollingsworth, P. M. (1978). An experimental approach to the impress method of teaching reading. Reading Teacher, 31, 624–627.

Homan, S. P., Klesius, J. P., & Hite, C. (1993). Effects of repeated readings and nonrepetitive strategies on students' fluency and comprehension. Journal of Educational Research, 87, 94–99.

Kamps, D. M., Barbetta, P. M., Leonard, B. R., & Delquadri, J. (1994). Classwide peer tutoring: An integration strategy to improve reading skills and promote peer interactions among students with autism and general education peers. Journal of Applied Behavior Analysis, 27, 49–61.

Labbo, L. D., & Teale, W. (1990). Cross-age reading: A strategy for helping poor readers. Reading Teacher, 43, 362–369.

Langford, K., Slade, K., & Barnett, A. (1974). An examination of impress techniques in remedial reading. Academic Therapy, 9, 309–319.

Law, M., & Kratochwill, T. R. (1993). Paired reading: An evaluation of a parent tutorial program. School Psychology International, 14, 119–147.

Levy, B. A., Nicholls, A., & Kohen, D. (1993). Repeated readings: Process benefits for good and poor readers. Journal of Experimental Child Psychology, 56, 303–327.

Lindsay, G., Evans, A., & Jones, B. (1985). Paired reading versus relaxed reading: A comparison. British Journal of Educational Psychology, 55, 304–309.

Lorenz, L., & Vockrell, E. (1979). Using the neurological impress method with learning disabled readers. Journal of Learning Disabilities, 12, 67–69.

Mathes, P. G., & Fuchs, L. S. (1993). Peer-mediated reading instruction in special education resource rooms. Learning Disabilities Research & Practice, 8, 233–243.

Mefferd, P. E., & Pettegrew, B. S. (1997). Fostering literacy acquisition of students with developmental disabilities: Assisted reading with predictable trade books. Reading Research and Instruction, 36 (3), 177–190.

Miller A., Robson, D., & Bushell, R. (1986). Parental participation in paired reading: A controlled study. Educational Psychology, 6, 277–284.

Neill, K. (1979). Turn kids on with repeated reading. Teaching Exceptional Children, 12, 63–64.

O'Shea, L. J., Sindelar, P. T., & O'Shea, D. J. (1985). The effects of repeated readings and attentional cues on reading fluency and comprehension. <u>Journal of Reading Behavior</u>, <u>17</u>, 129–142.

Pany, D., & McCoy, K. M. (1988). Effects of corrective feedback on word accuracy and reading comprehension of readers with learning disabilities. <u>Journal of Learning Disabilities</u>, <u>21</u>, 546–550.

Rashotte, C., & Torgesen, J. K. (1985). Repeated reading and reading fluency in learning disabled children. <u>Reading Research Quarterly</u>, <u>20</u>, 180–188.

Rasinski, T. V. (1990). Effects of repeated reading and listening-while-reading on reading fluency. <u>Journal of Educational Research</u>, <u>83</u>, 147–150.

Rasinski, T., Padak, N., Linek, W., & Sturtevant, E. (1994). Effects of fluency development on urban second-grade readers. <u>Journal of Educational Research</u>, <u>87</u>, 158–165.

Reitsma, P. (1988). Reading practice for beginners: Effects of guided reading, reading-while-listening, and independent reading with computer-based speech feedback. <u>Reading Research Quarterly</u>, <u>23</u>, 219–235.

Reutzel, D. R., & Hollingsworth, P. M. (1993). Effects of fluency training on second graders' reading comprehension. <u>Journal of Educational Research</u>, <u>86</u>, 325–331.

Rose, T. L. (1984). The effects of two prepractice procedures on oral reading. <u>Journal of Learning Disabilities</u>, <u>17</u>, 544–548.

Rose, T. L., & Beattie, J. R. (1986). Relative effects of teacher-directed and taped previewing on oral reading. Learning Disability Quarterly, 9, 193–199.

Shany, M. T., & Biemiller, A. (1995). Assisted reading practice: Effects on performance for poor readers in grades 3 and 4. Reading Research Quarterly, 30, 382–395.

Simmons, D. C., Fuchs, D., Fuchs, L. S., Hodge, J. P., & Mathes, P. G. (1994). Importance of instructional complexity and role reciprocity to classwide peer tutoring. Learning Disabilities Research & Practice, 9, 203–212.

Simmons, D. C., Fuchs, L. S., Fuchs, D., Mathes, P., & Hodge, J. P. (1995). Effects of explicit teaching and peer tutoring on the reading achievement of learning-disabled and low-performing students in regular classrooms. Elementary School Journal, 95, 387–408.

Sindelar, P. T., Monda, L. E., & O'Shea, L. I. (1990). Effects of repeated readings on instructional- and mastery-level readers. Journal of Educational Research, 83, 220–226.

Smith, D. D. (1979). The improvement of children's oral reading through the use of teacher modeling. Journal of Learning Disabilities, 12, 39–42.

Stoddard, K., Valcante, G., Sindelar, P., O'Shea, L., & Algozzine, B. (1993). Increasing reading rate and comprehension: The effects of repeated readings, sentence segmentation, and intonation training. Reading Research and Instruction, 32, 53–65.

Taylor, N. E., Wade, M. R., & Yekovich, F. R. (1985). The effects of text manipulation and multiple reading strategies on the reading performance of good and poor readers. Reading Research Quarterly, 20, 566–574.

Tingstrom, D. H., Edwards, R. P., & Olmi, D. J. (1995). Listening previewing in reading to read: Relative effects on oral reading fluency. Psychology in the Schools, 32, 318–327.

Turpie, J. J., & Paratore, J. R. (1995). Using repeated reading to promote success in a heterogeneously grouped first grade. In K. A. Hinchman, D. J. Leu, & C. K. Kinzer (Eds.), Perspectives on literacy research and practice: Forty-fourth Yearbook of the National Reading Conference (pp. 255–263). Chicago: The National Reading Conference.

Van Bon, W.H. J., Boksebeld, L. M., Font Freide, T. A. M., & van den Hurk, A. J. M. (1991). A comparison of three methods of reading-while-listening. Journal of Learning Disabilities, 24, 471–476.

VanWagenen, M.A. Williams, R.L., & McLaughlin, T.F. (1994). Use of assisted reading to improve reading rate, word accuracy, and comprehension with ESL Spanish-speaking students. Perceptual and Motor Skills, 79, 227–230.

Weinstein, G., & Cooke, N. L. (1992). The effects of two repeated interventions on generalization of fluency. Learning Disability Quarterly, 15, 21–28.

Winter, S. (1988). Paired reading: A study of process and outcome. Educational Psychology, 8, 135–151.

Young, A. R., Bowers, P. G., & MacKinnon, G. E. (1996). Effects of prosodic modeling and repeated reading on poor readers' fluency and comprehension. Applied Psycholinguistics, 17, 59–84.

Appendix B: Trade Books and Textbooks Used in Analysis

Benchley, N. (1972). <u>Small wolf</u>. New York: HarperTrophy.

Boning, R. A. (1997). <u>Getting the facts</u> (Book C of <u>Specific Skills Series,</u> 5th ed.).

Columbus, OH: SRA-McGraw-Hill. (Original work published 1963)

Branley, F. M. (1988). <u>Tornado alert</u>. New York: HarperCollins Children's Books.

Byars, B. (1994). <u>The golly sisters ride again</u>. New York: HarperTrophy.

Choi, S. N. (1993). <u>Halmoni and the picnic</u>. Boston: Houghton Mifflin Company.

Cleary, B. (1952). "Ribsy and the roast" from <u>Henry and Beezus</u>. New York: Morrow

Junior Books.

Cleary, B. (1979). "The great hair argument" from <u>Ramona and her mother</u>. New York:

Morrow Junior Books.

Coerr, E. (1986). <u>The Josefina story quilt</u>. New York: HarperTrophy.

Cooper, J. D., Pikulski, J. J., Au, K. H., Calderon, M., Comas, J. C., Lipson, M. Y.,

Mims, J. S., Page, S. E., Valencia, S. W., & Vogt, M. E. (2001). <u>Invitations to literacy</u>. Boston:

Houston Mifflin Company.

DePaola, T. (1989). <u>Tony's bread</u>. New York: G. P. Putnam's Sons.

Gibbons, G. (1992). <u>Say Woof!</u>. Boston: Houghton Mifflin.

Howard, E. F. (1993). <u>Mac and Marie and the train toss surprise</u>. Parsippany, NJ: Simon

& Schuster Books for Young Readers.

Levinson, N. S. (1992). <u>Snowshoe Thompson</u>. New York: HarperTrophy.

Lewis, T. P. (1971). Hill of fire. New York: HarperTrophy.

McKee, P., Harrison, M. L, McCowen, A., Lehr, E., & Durr, W. K. (1966). Climbing higher (Vol. 3.2 of Reading for Meaning, 4th ed.). Boston: Houghton Mifflin Company.

Minarik, E. (1957). Little bear. New York: HarperTrophy.

Monjo, F. N. (1993). The drinking gourd. New York: HarperTrophy.

Polacco, P. (1992). Chicken Sunday. New York: Philomel Books.

Rappaport, D. (1988). The Boston coffee party. New York: HarperTrophy.

Selsam, M. E. (1970). Egg to chick. New York: HarperTrophy.

Seuss, Dr. (1960). Green eggs and ham. New York: Random House.

Steig, W. (1986). Brave Irene. New York: Farrar Straus & Giroux.

Stolz, M. (1988). Storm in the night. New York: HarperCollins Publishers.

Turner, A. (1995). Dust for dinner. New York: HarperTrophy.

Wyler, R., & Ames, G. (1990). Magic secrets. New York: HarperTrophy.

When fluent readers read aloud, the text flows as if strung together like pearls on a necklace, rather than sounding halting and choppy. Here are some strategies to help second through fifth graders make important gains in this area. Before you use these techniques, however, you should assess your students and determine their needs. In order to read fluently, students must first hear and understand what fluent reading sounds like. From there, they will be more likely to transfer those experiences into their own reading. The most powerful way for you to help your students is to read aloud to them, often and with great expression. Choose selections carefully. Home » Research Article Vault » Uncategorized » Text Matters in Developing Fluent Reading. | Share: | More. 28 May 2002. Text Matters in Developing Fluent Reading. Elfrieda H. Hiebert & Charles W. Fisher, University of Michigan. This paper reports on two studies that address the function of text characteristics in the development of reading fluency. In the first study, texts used in the research on which the National Reading Panel (NRP; 2000) based its conclusions about the role of fluency in reading and its sensitivity to practice were grouped in four categories. Three of these text categories (pre-1990 basals, skill builders, and high-interest/low-vocabulary texts) used controlled vocabulary and accounted for 80% of all texts used in the studies reviewed by the NRP. Developing Fluent Readers. By: Jan Hasbrouck. What should fluency instruction look like? The ability to read text accurately, at a reasonable rate, and with appropriate expression and phrasing is certainly a key factor in being able to understand what has been read and to enjoy the process of reading. Nonetheless, fluency is only one of the key components of reading. I urge teachers to use the 50th percentile as a reasonable level of proficiency for students, and keep in mind that it is appropriate and expected for students to adjust their rate when reading texts of varying difficulty and for varied purposes.