

The Role of Text in Developing Fluency:
A Comparison of Two Interventions

Elfrieda H. Hiebert
University of Michigan

•Author Contact Information:

Elfrieda H. Hiebert
106 Phelan Court
Santa Cruz, CA 95060
hiebert@umich.edu

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•Running Head: A Comparison of Two Fluency Interventions

Abstract

This study examined an unaddressed aspect of the National Reading Panel's (2000) conclusions on fluency: text features. While both intervention groups read texts repeatedly, one read a literature anthology and the other read social studies and science texts with core high-frequency and phonetically regular words. Both groups had higher gains in fluency rates than is typical for second graders but the growth of those who read specially written texts exceeded that of the literature group. This additional growth enabled a larger percentage of students in the latter group to move from the 25th to 50th percentiles on national fluency norms than in the literature intervention.

The Role of Text in Developing Fluency:

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For many American schoolchildren, reading grade-level texts can be a laborious process. With enough time, even the fourth graders who score below the basic standard on the National Assessment of Educational Progress (NAEP) can figure out most of the words in a grade-level text when asked to read the text orally (Pinnell, Pikulski, Wixson, Campbell, Gough, & Beatty, 1995). The time that students spend in figuring out words, however, takes their attention away from the message of the text.

After reviewing the available research, the National Reading Panel (NRP) (2000) concluded that children could become more fluent readers through repeated reading of texts with monitoring or feedback by a teacher or tutor. The Panel stated that fluency practice could continue to aid most students in becoming more fluent through the end of fourth-grade and through high school for students with severe reading problems.

The Reading First program of the No Child Left Behind legislations (U.S. Congress, 2001) has based its mandates on the five domains of the NRP: phonemic awareness, phonics, fluency, vocabulary, and comprehension. The expectation of Reading First is that schools improve the literacy proficiencies on assessments of these five domains, including fluency. However, among questions that have not been addressed is whether the texts that teachers have available to them will support the fluency changes that the NRP said were possible and that are expected by Reading First.

In reviewing the available research, the NRP said nothing about the texts that were used in studies. When the texts in the fluency studies of the NRP's meta-analyses were examined, none that used the literature that is commonplace in current, mainstream textbook programs

showed a positive effect for fluency (Hiebert & Fisher, 2002). Texts in the studies that showed positive effects were ones in which the most-frequent words in written English accounted for a larger portion of unique or different words and where the percentage of rare, multisyllabic words was lower than is typical of literature.

This paper addresses the characteristics of texts for fluency practice. Specifically, it reports on the results of a study in which the texts for repeated reading opportunities differed. One group repeatedly read the literature in their district-adopted anthology, while the other group read from a set of social studies and science texts that were written to emphasize high-frequency and phonetically regular monosyllabic words and common concepts.

Fluency and Texts: What the Research Says

The findings of the handful of studies that have been conducted on the effects of text on reading fluency indicate that a high degree of overlap between the vocabulary of practice and criterion texts characterizes effective treatments. Rashotte and Torgesen (1985) modified texts to create one set in which the overlap of vocabulary across stories was low and a second set where overlap was high. The condition with the highest percentage of shared words yielded the greatest gains in reading speed but not on accuracy or comprehension.

In Faulkner and Levy's (1994) study, effects of word and conceptual overlap within grade-level texts were examined with 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). 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 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 stories with different content.

Faulkner and Levy (1994) argued that this finding explained results of early studies on repeated reading such as Dowhower's (1987). According to Faulkner and Levy, the gains that Dowhower reported in rate, accuracy, comprehension, and prosodic reading, regardless of training, reflected the 77% overlap between words in the practice and final texts read by students. Similarly, results reported by Samuels (1979) that poor readers read texts later in the intervention faster on their first reading than earlier texts could reflect opportunity to practice on a shared vocabulary.

The overlap in vocabulary goes beyond that shared by practice and criterion texts. As has long been recognized (Thorndike, 1921), a relatively small number of words accounts for substantial percentages of the total words in text. Based on a sample of 17.25 million words from texts used from kindergarten through college, Zeno, Ivens, Millard, and Duvvuri (1995) reported that: (a) 25 words account for 33% of the total words; (b) 100 words for almost 50%; (c) 300 words for 60%; (d) 1000 words for almost 70% and (e) 10,000 for 85%. The remaining 15% of the words in texts were accounted for by approximately 145,000 different words.

When students have opportunities to read texts in which high-frequency words and words with common and consistent patterns account for large percentages of the unique words in text, their fluency benefits. This conclusion is based on an analysis of the texts that were used in the meta-analysis on which the NRP based their conclusions about fluency (Hiebert & Fisher, 2002). Of the 13 texts in the meta-analysis and the 46 studies in the extended database, the majority (77% in the former group and 80% in the latter group) used three types of texts with controlled vocabulary: pre-1990 basal texts, skill-builder texts, and high-interest/low-vocabulary (HI/LV)

books. Of the three studies in the meta-analysis that used literature to promote fluency, only one reported on fluency rates (Eldredge, Reutzel, & Hollingsworth, 1996). Eldredge et al. (1996) reported no significant difference in rate of reading between the group that repeatedly read the literary texts with teacher modeling and the group that read literature but had no repeated or teacher-modeled reading.

An analysis of the features of the three types of controlled texts at the third-grade level showed that percentages of unique words in the pre-1990 basals, skill-builders, and HI/LV that were among the 1,000 most frequent words ranged from 68-75%. In current, mainstream textbook programs, 60% of the words are of this type. Further, the 28% of unique words within current literature textbooks that were multisyllabic and less frequent was almost twice as much as the 15% of similar words across the three types of controlled texts.

Changes have occurred in textbooks as a result of the policies of America's two largest states that adopt textbooks statewide—California and Texas (Hoffman, Sailors, & Patterson, 2002). However, these policies pertain to the texts for the first semester of first grade. After the middle of grade one, literature continues to dominate the materials that are used for reading instruction after the mid-point of grade one (Hiebert, 2001).

This study considered children's fluency during the latter half of second grade, the period when students establish their base speed in reading (Hasbrouck & Tindal, 1992). If children could reach a higher level as second graders, the amount that they read and the rate that they read in the future may be positively influenced in subsequent grades (Cunningham & Stanovich, 1998). The teachers of students in both groups were guided in using the repeated reading techniques of Fluency-Oriented Reading Instruction (FORI) (Stahl, Heubach, & Cramond, 1997). However, what the students read during the repeated and monitored readings differed.

The FORI group read from the district's literature-based textbook program. The second group, the Wide Reading group, also read the texts from the literature-based textbook program but these texts were not the focus of repeated reading. Repeated reading occurred with a set of science and social studies texts that had a higher than typical number of high-frequency words and phonetically regular words and a lower than typical number of unique words.

Method

The FORI group consisted of 54 students from four classes in one school who returned parental permissions to participate in the project and the Wide Reading group consisted of 45 students from 3 classes in a second school. The intervention occurred over a 10-week period during the second half of the school year.

The Instructional Procedures of the Interventions

Both interventions shared the basic components of the FORI model that Stahl et al. (1997) had used. That is, students engaged in a home reading program and had a reading choice time in their classrooms. Classroom reading instruction involved repeated, modeled readings of texts. In the FORI condition, the texts in the student anthologies (Literature Works (Pearson et al., 1998)) provided the focus of instruction. Students in the Wide Reading condition also read the week's focus text but in a guided reading format with their teachers over one to two days, rather than for the entire week. During the remaining days of a week's reading lessons, Wide Reading students read a set of science and social studies that were specifically constructed to support meaningful fluency development (Hiebert, 2003).

The Texts

Texts read by the two groups over the target period were analyzed with a HyperCard application that summarizes the number of unique or different words within a text and the high-

frequency ratings and decodability patterns of unique words. The specification of high-frequency and phonetically regular words can be adjusted within the application. Analyses of end of year assessments for first and third grade have been used to establish core curriculum for the primary grades (Hiebert, 2002). The second-grade curriculum has been situated between the first- and third- grade curricula: the 500 most-frequent words (Zeno et al., 1995) and all vowel patterns in single-syllable words except for those with diphthongs and variant patterns.

Texts from a literature-based anthology. Since the district-adopted, literature-based program used in the study, Literature Works (Pearson et al., 1998), is no longer marketed, its features were compared to those of textbook programs currently on the market. The ten texts of Literature Works that were used during the 10-week intervention were compared with ten texts from the second-grade components of a program that met the criteria for the Texas textbook adoption--Scott Foresman (Afflerbach et al., 2000)—and a program that met the criteria for the California textbook adoption--Open Court (Adams et al., 2002). To establish how the current literature-based programs compare to the typical texts used in the NRP-reviewed fluency studies, ten texts from the second-grade component of a 1983 textbook program, Scott Foresman (Aaron et al., 1983), were analyzed. A 50-word excerpt from a typical text in Literature Works, The Mysterious Tadpole (Kellogg, 1977), appears in Table 1 and data for the four textbook programs appear in Table 2.

Insert Tables 1 & 2 about here

With 18 new, unique words per 100, the district's textbook program was similar to the new, unique word rate and in the percentage of those words that were multisyllabic in texts used

in Texas and California. The texts from Literature Works had 50% more new, unique words per 100 than in a comparable set of texts from the 1983 textbook program. Relative to the 1983 program, the percentage of high-frequency words was considerably lower (29% versus 45%). The percentage of multisyllabic words that appeared a single time in Literature Works—26%--was the percentage of all multisyllabic words in the 1983 basal program.

Texts in the Wide Reading intervention. The texts read by the Wide Reading group for three days a week were written to emphasize four dimensions: (a) a lower number of new, unique words per 100 than is typical of trade books, allowing for more repetition of focus words; (b) a higher percentage of words that occur frequently and/or that have common, consistent patterns and a lower percentage of multisyllabic words, especially those occurring a single time or singletons, than is typical in trade books; (c) texts of lengths that correlate with the speed that grade-level students at the 50th and 75th percentiles can read in a minute; and (d) texts that are thematically linked.

The summary of text features in Table 2 indicates that the first criterion was achieved. The 13 new, unique words per 100 is almost 30% less than the 18 new, unique words of Literature Works or of current textbook programs adopted for use in Texas and California.

The second criterion of increasing high-frequency or phonetically regular words and decreasing the number of multisyllabic words, especially singletons, was also achieved. The figure of unique words falling within the 500 most-frequent words—58%--was exactly double that of the 29% of unique words of this type in Literature Works. Further, the number of multisyllabic words was a third that of Literature Works and the number of multisyllabic singletons was almost nonexistent—1%.

To achieve the third and fourth criteria, five texts were written per topic. The excerpt in Table 1 comes the physical science topic of Force and Motion, read during the latter part of the intervention when the five individual texts were 110 words long. This number falls halfway between the 124 words correct per minute read by the 75th percentile in the spring of second grade and the 94 of the 50th percentile (Hasbrouck & Tindal, 1992). Texts at the beginning of the intervention were 90 words in length, the halfway point between the number of words correctly read per minute by students at the 50th and 75th percentile in winter of second-grade (Hasbrouck & Tindal, 1992). Texts in the middle of the intervention were 100 words in length. While many children were expected to begin the intervention with reading rates far below these levels, the aim was to develop a metacognitive awareness of lengths of text and reading speed.

The topics were based on standards of national, professional associations in science and social studies. In science, topics pertained to three areas: life, earth, and physical sciences. In social studies, the topics related to civics, geography and economics, and history. Each text of a topic developed a different concept. For example, other texts in the Force and Motion unit pertained to friction, gravity, what constitutes work, and expending energy.

The Assessment

All students were individually assessed at the beginning and end of the intervention on a text and with procedures similar to those used in informal reading inventories. Graduate students in reading education who had been trained in administration of clinical assessments, including the Gray Oral Reading Test (GORT) (Wiederholt & Bryant, 2001), gave the assessment. They were not involved in the design or implementation of the intervention. They used the administration procedures of the GORT, counting substitutions, insertions, and omissions as errors and discontinuing the task when students made 10 consecutive oral reading.

The assessment text was informational in genre, pertaining to defense mechanisms of coral and king snakes. It was 100 words in length and contained 52 unique words of which 85% were among the 500 most-frequent words (Zeno et al., 1995). Assessment administrators wrote down beginning and ending times of students' oral readings.

Assessment administrators also rated students' prosody according to the 4-point scale used by Pinnell et al. (1995) in the special study of the 1994 NAEP. Ratings of 4 are given to oral reading renditions where students read in large, meaningful phrase groups; 3 to three to four word phrase groups; 2 to two-word phrases with some three- or four-word groupings; and 1 to word-by-word reading.

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 scoring procedures of the NAEP (Donahue, Finnegan, Lutkus, Allen, & Campbell, 2001), was used to score the responses. Scores from 0 to 4 indicated progressively higher levels of comprehension, with 0 indicating no evidence of comprehension and 4 indicating full comprehension of the text. Two researchers rated a randomly selected sample of pre- and post-tests 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 remaining protocols were scored.

Results

The amount and kind of reading in the two groups are examined first, followed by an examination of two aspects of their performances: (a) mean differences between groups and (b) percentages of students in the two interventions who attained an external standard.

Quantity and Type of Words Read in Two Conditions

The numbers of total and unique words students encountered over the 10-week interventions are summarized in Table 3.

Insert Table 3 about here

With three repeated readings of the longer texts in Literature Works, the FORI students read roughly the same number of total words as the Wide Reading students who read the Literature Works texts once and the shorter, specially written texts three times. When unique words are considered “new” at each reading, FORI students encountered more unique words than Wide Reading students: 3966 for the former and 3191 for the latter. If unique words are counted a single time, the FORI students encountered 1322 unique words and the Wide Reading students, 1545. Despite reading more texts, the Wide Reading students did not encounter substantially more unique words because 400 of the 623 unique words of the shorter, specially written texts were among the 1322 unique words in the literature-based anthology.

Mean Differences

Because the FORI and the Wide Reading groups differed at the beginning of the 10-week project in the number of words correct per minute (wcpm)—38 wcpm for the former; 53 for the latter—the pre-test scores were used as covariates in the analysis of the post-test scores. The adjusted means for the two groups—69.7 wcpm (FORI) and 76.0 wcpm (Wide Reading)—were significantly different at the .09 level.

In lieu of data from a passive control group, the typical growth in wcpm was used to determine growth patterns of the two intervention groups (Fuchs, Fuchs, Hamlett, Waltz, &

Germann, 1993; Hasbrouck & Tindal, 1992). Based on the national norming sample of Hasbrouck and Tindal (1992), Fuchs et al. reported that second graders typically gain 1.5 words per week. Fuchs et al. identified 2 words per week at second grade as necessary, if the achievement gap is to be closed. Students in both intervention groups exceeded the ambitious goal of 2 words per week that Fuchs et al. identified, as evidenced by the average gain of 2.5 words per week for the FORI group and 3.1 words per week for the Wide Reading group. The gain of the FORI group exceeded the ambitious goal by 25%, while the gain of the Wide Reading group exceeded the same standards by 55%.

On the prosody measure, the FORI students went from an average of 1.2 to 2.6, while the Wide Reading students went from 1.7 to 2.9. This difference of .2 was not statistically significant. Both groups also had positive increases in comprehension. The increase of .6 for the Wide Reading group (from 1.7 to 2.3) was not statistically greater than the increase of .4 for the FORI group (from 1.6 to 2.0).

Attainment of Standards

The Reading First legislation requires that all students be evaluated according to particular standards. Since there are no national standards on fluency, the levels that Hasbrouck and Tindal (1992) established for attainment of the 25th, 50th, and 75th percentiles in winter and spring of second grade were used. The percentages of students in the two groups who achieved particular percentile levels appear in Table 4.

Insert Table 4 about here

Both groups had a similar increase in the percentage of students who were at 25th percentile or higher at the end of the 10-week period—around 15. Within the Wide Reading group, however, a considerable group of students moved from the 25th to 50th percentile groups. In comparison, the FORI group had a similar percentage in winter and spring at the 50th percentile or higher.

Conclusions and Implications

The NRP (2000) concluded that monitoring of students' oral reading by a teacher or a tutor and repeatedly reading a text supports increased fluency. The present study confirmed this pattern, with students in the intervention groups increasing in their fluency relative to the status quo. Typically, second graders gain 1.5 wcpm per week. Students repeatedly reading texts in their literature anthologies exceeded this level, with an average gain of 2.5 wcpm, and those who additionally read a set of science and social studies texts that had high percentages of high-frequency words and low percentages of multisyllabic words gained 3.1 wcpm.

Available data indicate that children's reading performances stay fairly static in relation to their peers from year to year (Juel, 1988). Both interventions were effective in changing the status of a portion of their samples, relative to peers in a national sample. In both groups, an additional 14-15% of students moved into the 25th percentile of a national norming sample. The Wide Reading intervention, however, was effective in moving a sizable group of students—15% of the sample--from the 25th to 50th percentile groups.

For the most part, the nature of texts has been ignored in recent discussions of fluency. When Samuels (1979) and Heckleman (1966) first described repeated reading and the neurological impress method, respectively, school texts had highly controlled vocabulary. These texts were criticized during the 1980s (Anderson, Hiebert, Scott, & Wilkinson, 1985),

resulting in a switch to literature-based texts (California English/Language Arts Committee, 1987; Texas Education Agency, 1990). Despite a revival of the findings from a research base that, in the main, used texts with highly controlled vocabulary, the texts have been ignored.

Current textbooks for preservice teachers (Cooper, Kiger, & deVile, 2002) and the teachers' manuals of mainstream textbook programs (Cooper et al., 2001) suggest that literature can and should be used for fluency practice. Indeed, it could be argued that texts with challenging vocabulary for fluency practice can prove an advantage for students when they read texts with more controlled vocabulary, such as those on most norm-referenced tests. From this perspective, the FORI students should have had an advantage over the Wide Reading group on this study's criterion task. Whereas the FORI students typically read texts with 7 multisyllabic, rare words per 100, the criterion text had 2 multisyllabic, rare words. However, this hypothesis was not born out. FORI students did not outperform their peers in the Wide Reading intervention on the criterion text.

Alternatively, it could be argued that the Wide Reading students were put at a disadvantage when confronted with difficult texts. That is, since they had practiced with easy text, they were not ready for more difficult text. While this study did not examine how students did with texts that were considerably harder than the criterion text, another part of this research project did examine the performances of both groups on the Reading Comprehension sub-test of the Wechsler Individual Achievement Test (Stahl, 2002). The performance of the Wide Reading group was statistically higher than that of the FORI group ($p = .044$).

The experiences with students in this study and other studies suggest that difficult texts do little to support children who are slow readers in becoming more fluent with the high-frequency words and the monosyllabic words that have common, consistent patterns. In reading

a text such as The Mysterious Tadpole, the attention of slow readers and their teacher or tutor guides is directed at figuring out words such as *mysterious*, *tadpole*, *McAllister*, *Scotland*, *Louis*, *collection*, and *Shelbert*. Speeded recognition of words such as *uncle*, *nature*, and *entire* (all of which have frequency rankings within the 800-900 group) is unlikely to occur as students and their teacher guides talk about the pronunciations and meanings of unusual words.

When reading a text from the science and social studies texts that were part of the Wide Reading intervention, such as Push and Pull that is excerpted in Table 1, students may require assistance in recognizing the words *wagon* and *force* on their first encounter. Once pronunciation of these words is confirmed, however, second graders can draw on background knowledge and proceed. In the next four sentences, students have five occasions to read *wagon* and *force* again. Not needing to figure out a new set of words in the next sentence, students can respond to the teacher's recommendation to read more smoothly and with greater speed.

Numerous questions remain about the development of fluency over children's elementary school years. The present study is a beginning in addressing one of the most critical of these questions—the matter of text. The studies upon which the NRP based its conclusions on fluency used particular kinds of texts. Analyses of the first-grade texts in the mainstream basal readers show that they contain many rare words that are repeated infrequently (Foorman, Francis, Davidson, Harm, & Griffin, 2002). This study suggests that these texts can produce some improvement in fluency but not to the level or degree that is possible or required for challenged students to have automatic word recognition with highly frequent and decodable words. For teachers to make the difference that current policy initiatives expect, that the NRP indicates is possible, and that schoolchildren require to be fully participating readers, the matter of text cannot be ignored.

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Table 1. Samples of Text in Two Interventions

FORI Intervention	Wide Reading Intervention
The Mysterious Tadpole (Kellogg, 1977) Uncle McAllister lived in Scotland. Every year he sent Louis a birthday gift for his nature collection. “This is the best one yet!” cried Louis. The next day he took his entire collection to school for show-and-tell. “Class, this is a tadpole,” said Mrs. Shelbert.	Push or Pull (Hiebert, 2003) You and your friends are playing with a wagon. One of your friends gets into the wagon and asks you to move it. How can you make the wagon move? You can push the wagon or you can pull the wagon. When you push or pull the wagon, you use force.

Table 2. Features of Basal Anthologies Over Time and Features of Texts Used in Wide Reading Condition

	Total Words per Text (#)	New, Unique Words per 100 (#)	High-Frequency Words (%)	Multisyllabic Words [Singletons] (%)
Scott Foresman (1983)	864	12	45	26 [11]
Literature Works (1998)	727	18	29	39 [26]
Open Court (2002)	1019	16	30	45 [27]
Scott Foresman (2000)	628	18	38	33 [18]
Specially Written Texts	486	13	58	12 [1]

Table 3. Number and Kinds of Words Read by Two Groups Over 10-Week Intervention

	Total Words			Unique Words			Unique Words (HF)			Unique Words (MS)		
	LW*	SWT**	Total	LW	SWT	Total	LW	SWT	Total	LW	SWT	Total
FORI (3 RRs of LW)	3(7270)		21810	3 (1322)		3966	3 (383)		1149	3 (516)		1548
Wide Reading (1 LW + 3 RR of SWT)	7270	3(4860)	21850	1322	3 (623)	3191	383	3 (361)	1466	516	3 (75)	741

*Literature Works

**Specially Written Texts

Table 4. Attainment of Standards: Cumulative Percentages of FORI and Wide Reading Conditions at Different Levels

Percentile Levels	FORI Winter	FORI Spring	Wide Reading Winter	Wide Reading Spring
75	2	7	7	9
50	21	22	25	40
25	36	50	61	76