

Becoming Fluent: Repeated Reading With Scaffolded Texts

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The interaction between reader and text is at the center of definitions of reading comprehension (RAND Reading Study Group, 2002). The common perspective is that when teachers are there to scaffold and guide the interaction, features of texts, such as engagingness, content, and length, are as important in determining text difficulty as the ability of children to read the words (Fountas & Pinnell, 1999; Hoffman & Schallert, 2004). Although teachers have a central role in guiding the interactions of beginning and struggling readers with texts, the development of independent reading also requires that children read many texts with minimal teacher support. An underlying premise of this chapter is that the word-level features of texts that beginning and struggling readers are given to read will support the fluency that contributes to meaningful comprehension of text. Just as teachers scaffold reading events, the characteristics of texts serve to scaffold the reading act for beginning and struggling readers.

A second premise of this chapter is that the selections in reading textbooks offered by major U.S. publishers for primary-grade instruction have not been chosen with fluency development in mind. As demonstrated by several researchers (Foorman, Francis, Davidson, Harm, & Griffin, 2004; Hiebert, 2005a; Hoffman, Sailors, & Patterson, 2002), the word-level features of instructional texts for the primary grades—during which period the foundations of fluency are laid—have changed substantially over the past 15 to 20 years. The nature of these changes can be seen in the first two excerpts in Table 10.1.

These two excerpts, published by the same company about 15 years apart, appear in the middle of the second-grade basal reading program. Excerpt 1, part of the 1982 program (Clymer & Venezky, 1982), comes from a text in which approximately one out of every 100 words is both multisyllabic and rare (i.e., *not* among the 1,000 most frequent words

**Table 10.1. Excerpts from different types of texts
(second-grade level)**

| Excerpt number | Text type | Excerpt |
|----------------|---------------------------------|--|
| 1 | Controlled reading text | She reached into her hat, and pulled out ... a chicken! “That’s great!” said May. “A chicken is not a rabbit,” said Jimmy Smith. “Give me a little time,” said Madge. She waved her wand. She reached back into her hat. She said the magic words, and pulled out...a fox! (Clymer & Venezky, 1982). |
| 2 | Literature text (used in study) | Alphonse was delighted to see all the swimmers. “It’s a submarine from another planet!” bellowed the coach. “Call the police! Call the Navy!” “No! It’s a tadpole!” cried Louis. “He’s my pet!” The coach was upset and confused. “You have until tomorrow,” he cried, “to get that creature out of the pool!” (Kellogg, 1977, in Pearson et al., 1998) |
| 3 | Scaffolded text (used in study) | George Washington Carver was a scientist who knew about plants. He learned that soil wears out when farmers grow the same crop every year. When soil wears out, crops are poor. George Washington Carver showed farmers how to grow one crop in one year. Then they would grow a different crop in the next year. (Hiebert, 2003) |
| 4 | Science textbook | Flowers and fruits Seeds form inside the flowers of many adult plants. Pollen, a powdery material, is made by one part of the flower. Pollen is needed to make seeds form. There are tiny eggs inside some flowers. When pollen lands on the eggs, seeds may start to form. (Badders et al., 2000) |
| 5 | HI/LV | Frog was in his garden. Toad came walking by. “What a fine garden you have, Frog,” he said. “Yes,” said Frog. “It’s very nice, but it was hard work.” “I wish I had a garden,” said Toad. “Here are some flower seeds.” (Lobel, 1979) |
| 6 | Literature anthology, example 1 | “My, my!” sighed Mrs. Frye. “Cool!” said Ira Baker. “Brrr!” chattered Mr. Boyle. “Wheee!” squealed the babies. “OOOO!” said the gathering crowd, thrilled to be chilled to the bone. No wonder no one noticed a little breeze rippling the haze and turning the leaves inside out. (Poydar, 1996, in Afflerbach et al., 2000) |
| 7 | Literature anthology, example 2 | When the lights go on in the town, the worker’s day is done. “Goodnight, my dear white bench,” he says. “You must be very tired. I’ll see you tomorrow.” He turns on the lights of his little motor cart and drives home. The park is covered with darkness. (Takeshita, 1988, in Afflerbach et al., 2000) |

in written English); these are words such as *chicken*, *rabbit*, and *magician*. Excerpt 2, from the 1998 program, comes from a textbook that consisted of trade book selections, such as *The Mysterious Tadpole* (Kellogg, 1977). In that selection, approximately 7 out of every 100 words are both multisyllabic and rare; these are words such as *submarine*, *bellowed*, and *creature*. Not only are there more rare multisyllabic words in the more recently published program, but the familiarity of these words for second graders also differs. Although *chicken* and *rabbit* may not occur among the 1,000 most frequent words in written English, second graders are likely to be familiar with the concepts. Words such as *bellowed* and *creature* will require more explanation.

These observations regarding text features are made to illustrate that different types of texts have important but unique roles in instructional programs. Although trade books develop literary knowledge, texts with high percentages of highly frequent and common decodable words support the development of automatic, meaningful reading for beginning and struggling readers. This chapter is concerned with texts that support the latter goal—the attainment of fluency among beginning and struggling readers. My intent is to portray the background and evidence for the role of a particular type of text in fluency development among beginning and struggling readers by (a) presenting a model of text difficulty that recognizes the role of word-level features, (b) summarizing research and theory on the kinds of texts that promote fluency, (c) presenting the results of a study in which the texts for fluency practice were selections from a literature-based basal series or “scaffolded” texts that emphasized the 1,000 most frequent words, and (d) proposing implications of the foregoing for classrooms.

A Definition of Fluency

In fluent reading, word recognition is sufficiently automatic and accurate so that a reader’s attention is focused on the meaning of the text (LaBerge & Samuels, 1974; Samuels, 2002). Fluent reading does not preclude hesitating or pausing to decode unknown words. However, it is unlikely that readers will have a high-quality interpretation of a text when many words need to be decoded. The breaking point at which the number of known words is insufficient for constructing a useful interpretation of a text is determined by reader proficiency and background knowledge. For example, reading educators who read this chapter facily but who are not researchers in neuroscience may find it difficult

to give anything but a superficial interpretation to an article on the molecular organization of the olfactory septal organ (Tian & Ma, 2004) in the *Journal of Neuroscience*.

Fluent readers know the majority of the words automatically and attend to less frequent words in texts; thus, the aim of fluency practice would seem to be to increase the automatic response of beginning and struggling readers to the words that account for the majority of the words in texts. Fortunately for the instruction of fluency, a very small group of unique words accounts for the majority of the total words in written language (Adams, 1990). In addition, a small group of vowel patterns appears consistently in many common words that appear in texts for beginning readers (Wylie & Durrell, 1970).

As yet, analyses that pinpoint the size and the content of the vocabularies of young readers who attain fluency as first graders remain to be conducted. Research indicates that differences in the automaticity of beginning readers with the majority of the words in typical first-grade texts are already substantial by mid-first grade (Good, Wallin, Simmons, Kame'enui, & Kaminski, 2002; Lesgold, Resnick, & Hammond, 1985). Research also provides insight into how readers develop this automaticity. Less skilled readers process all words, even words that appear frequently, letter by letter, unlike skilled readers, who process the same words holistically (Samuels, LaBerge, & Bremer, 1978). When confronted with an unfamiliar word, skilled readers may engage initially in letter-by-letter processing but move to a holistic strategy with increased exposure to the word (Samuels, Miller, & Eisenberg, 1979). Familiar words are responded to quickly; familiarity comes from repeated experiences. In a subsequent section of this chapter, I discuss the texts that provide the repeated experiences with the vocabulary that accounts for the majority of the words in written language. Research shows that reading of texts with high percentages of unique words that are both rare and multisyllabic is unlikely to support increases in automaticity with the words that appear frequently in texts.

Oral-reading fluency is a fairly robust proxy for silent reading comprehension (Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993; Pinnell et al., 1995). However, because reading is typically a silent act, automaticity and accuracy in silent reading, not oral reading, is the ultimate goal. Readers—even beginning and struggling readers—have greater latitude in strategies during silent reading than oral reading. When reading aloud for an adult, beginning and struggling readers may stumble repeatedly

over a word such as the name of a character in a narrative (e.g., Alphonse) that they may skip over in silent reading. Although oral reading provides the means for capturing fluency, it should not be viewed as the be-all and end-all of fluency practice. Ultimately, what matters is the student's ability to transfer fluency from oral to silent reading.

Successful fluency interventions need to provide opportunities for students to transfer their skills to silent reading. Giving students a purpose for reading a text and a definite time period in which to accomplish it provides scaffolding for silent reading (Manning & Manning, 1984; Samuels, 2005). This scaffolded silent reading is quite different than the independent silent reading for which the National Reading Panel (NRP) found little experimental evidence for positively influencing fluency (National Institute of Child Health and Human Development [NICHD], 2000). While research has yet to experimentally address the efficacy of scaffolded silent-reading events, the ability of students to transfer fluency from oral-reading events to silent reading events determines their performance on national and state assessments.

The Text Elements by Task (TExT) Model and Fluency Development

After establishing the degree to which textbooks for beginning and struggling readers had changed (from controlled to literature-based texts in the late 1980s and then from literature-based to decodable texts in the mid-1990s; Hiebert, 1999), Hiebert and colleagues began to develop a model for the effects of text on word recognition and fluency among beginning and struggling readers (e.g., Hiebert, 2005a; Hiebert & Fisher, 2005; Hiebert, Martin, & Menon, 2005). This model, called the Text Elements by Task (TExT) model, focuses on the task that a text poses for beginning and struggling readers. Although many other factors (see Gray & Leary, 1935) influence reading proficiency, beginning and struggling readers must be able to identify words to read a text independently. In the TExT model, two features of text are seen to influence the success of beginning and struggling readers in identifying words in text: the linguistic content (e.g., the letter-sound patterns within words in the text and the frequency of words within written English) and the variety in this linguistic content (e.g., the cognitive load required to process the linguistic content).

The Components of the TExT Model

Linguistic knowledge refers to the size and features of a word corpus a reader needs to know in order to read a text independently. It has long been recognized that a relatively small number of words accounts for a substantial percentage of the total words in text (Thorndike, 1921). Based on a sample of 17.25 million words in texts used from kindergarten through college, Zeno, Ivens, Millard, and Duvvuri (1995) reported that 25 words account for 33% of the total words in the corpus. When the number of unique words gets to around 5,575, approximately 90% of the total words in texts from third through ninth grade (Carroll, Davies, & Richman, 1971) and about 80% of the total words in texts from kindergarten through college (Zeno et al., 1995) are accounted for. The remaining words in texts come from an enormous corpus of 150,000 or more words. Even when the corpus is reduced substantially by clustering words with shared root words (Nagy & Anderson, 1984), it is impractical to teach all of these words. However, students can be expected to use knowledge of word parts and syntax together with general background knowledge to establish the meanings of rarely occurring unique words and have sufficient cognitive resources to comprehend texts, if they are automatic with the words that account for 80%–90% of their texts (Samuels, 1979, 2002).

Automaticity with the majority of words also assumes that students have the ability to generalize common and consistent letter–sound patterns within less frequent words. For example, even though the word *mat* is not within the 5,575 most frequent words, the presence of numerous words within the 5,575 that share the *at* rime (*bat, fat, hat, pat, rat, sat, that*) leads to the expectation that *mat* would be recognized more readily than another word with similar frequency but with a more complex structure, such as *punctuation*. Consequently, the analyses of corpora according to the TExT model consider both the frequency and the linguistic structure of words.

Cognitive load refers to the number of words in a text that are not recognized automatically by readers and thus require conscious processing. Although these unknown words vary among individual readers, some general characteristics of texts can be identified that are likely to influence many beginning and struggling readers. In a review of word learning from text, Swanborn and de Glopper (1999) found that the number of rare words in text was a critical feature. They reported that the probability of learning a word is about .30 when the density of un-

known words in a text is 1:150 words. This probability drops to .14 when the ratio is 1:75. In current second-grade literature textbook anthologies where the ratio of rare multisyllabic single-appearing words is 7:100 (Hiebert, 2005a), the cognitive load is high. Struggling readers are unlikely to become automatic readers of texts when they are stopping to decode and retrieve the meaning of numerous rare words such as *submarine* and *bellowed* (see Excerpt 2 in Table 10.1). Even after several repeated readings of a text, these numerous rare words may continue to serve as obstacles to beginning and struggling readers. With students who have at least basic reading proficiency, a range of 6–12 repetitions is required for meaningful recognition of words (Jenkins, Stein, & Wysocki, 1984; McKeown, Beck, Omanson, & Pople, 1985).

A Review of Existing Research on Fluency and the TExT Model

The National Reading Panel recently concluded that fluency can be attained through repeated and guided reading (NICHD, 2000). This conclusion was based on a review of a sample of studies selected to meet certain methodological criteria. Although the NRP listed the nature and difficulty of the various texts that were used in treatments in their sample of studies, they did not differentiate their findings on fluency by either text difficulty or type. Following the NRP's report, Hiebert and Fisher (2005) reviewed the original reports of the 51 studies identified by the NRP (16 studies that the NRP used in a meta-analysis and 35 additional studies in its extended database) to establish the characteristics of texts used in repeated and guided reading interventions. Four types of texts were identified: (1) pre-1990 basal texts, (2) children's literature, (3) skill builders, and (4) high-interest/low-vocabulary texts (HI/LV). When texts with controlled vocabulary were clustered (i.e., pre-1990 basal, skill builder, and HI/LV texts), they accounted for 73% of the studies overall and 74% of the studies used in the meta-analysis. The four studies (26%) in the meta-analysis that used texts from children's literature were further examined to establish their contribution to the overall effect size of .48 (across measures of fluency, vocabulary, and comprehension) reported by the NRP. Only one of these four studies reported a fluency outcome; in that study, the treatment and comparison groups did not differ significantly on fluency. Thus the effect size for fluency reported by the NRP came from the studies that used text types with some level of controlled vocabulary. It follows that the panel's fluency finding, in the

absence of additional data, cannot be generalized beyond texts with some level of controlled vocabulary.

Hiebert and Fisher (2005) also analyzed the unique words in prototypical texts for each of the four text types (i.e., children's literature, pre-1990 basal textbooks, skill builders, and HI/LV). Not surprisingly, the children's literature text type differed from the other three text types in number and kinds of unique words. On average, 92% of the words in the three controlled text types were included in the 3,000 most frequent words, 83% in the literature text type. Multisyllabic words that appeared as single-time words accounted for 3.8% of the words in the controlled text types; in samples of children's literature, 10%.

Further review of the fluency studies reviewed by the NRP (NICHD, 2000) revealed that text characteristics were typically not manipulated. Most often, instructional conditions (e.g., repeated reading with or without teacher guidance) were manipulated, but participants in all conditions read the same text. In one of the few studies of repeated reading where text had been manipulated, Rashotte and Torgesen (1985) found that repeated reading resulted in improved fluency only when students read stories that shared a high percentage of words. When the percentage of shared words was low, repeated reading did not result in increased fluency levels. Because this finding could reflect shared content and not shared words, Faulkner and Levy (1994) examined students' reading rate and accuracy after reading texts with similar content that did not share critical vocabulary (e.g., the word *automobile* appears in one text, and the word *car* in the other) and texts with shared vocabulary that did not share content (e.g., *birdie* in a game of golf or a young child's description of a bird). Good and poor readers had the most transfer when words and content were shared. Poor readers, unlike good readers, also improved in reading rate and accuracy when texts had high levels of word overlap but did not share content.

Other than these two studies (Faulkner & Levy, 1994; Rashotte & Torgesen, 1985), the texts in fluency treatments have not been manipulated systematically. Furthermore, in both of these studies, experimenters (rather than teachers) conducted the training sessions, and training sessions were limited in scope. The limited research and the limitations of the research on effects of text features on fluency led Hiebert (2005b) to conduct a study of teachers providing the fluency instruction to their classes using different kinds of texts.

Two groups of second-grade classes participated in Fluency-Oriented Reading Instruction (FORI; Stahl, Heubach, & Cramond, 1997). The literature group read texts from the district's literature-based reading program. The scaffolded-text group read from a set of science and social studies texts that were written to have few, if any, rare multisyllabic single-appearing words. A passive control group read from the district's literature-based program. Both intervention groups made greater fluency gains than the control group; in addition, the scaffolded-text group made greater fluency gains than the literature group.

Although it was not by design, it came to light that a substantial difference in time allocation to reading occurred between the literature- and scaffolded-text groups. A federal school reading improvement grant was implemented in the school where literature texts were used for repeated reading. This grant required that second-grade teachers devote three hours daily to reading and language arts. Teachers in the school using scaffolded texts complied with the district guideline of 75 minutes per day for reading and language arts. As a result, the superior performance of the scaffolded-text treatment was accomplished in about 60% of the time spent on reading by the literature group. That is, shorter periods of time with less difficult texts resulted in higher performances when compared to longer periods of time with difficult texts.

More than 30 years ago, Barr (1974) reported that effective teachers compensate for difficult texts by spending more time on them. Despite extensive research on the importance of engaged learning time (see Fisher & Berliner, 1985), this factor has not been systematically addressed in the research on fluency. Unlike the research on phonemic awareness, about which the NRP (NICHD, 2000) was able to make definitive conclusions about the point of diminishing returns in the investment of time, the corpus of fluency studies did not support analogous conclusions, nor did it suggest guidelines for optimal lengths of fluency training.

In educational practice, a common interpretation of research findings on time allocation is to assume that if a little is good, more will be better (Fisher & Berliner, 1985). As students approach automaticity, however, longer and more fluency sessions may have little effect (Logan, Taylor, & Etherton, 1999). Further, as Underwood and Pearson (2004) have suggested, excessive fluency practice could serve to compromise students' engagement and comprehension. Federal mandates requiring substantial investments of instructional time in reading instruction (No

Child Left Behind Act of 2001 [NCLB], 2002) create questions that merit further investigation about the amount of time spent on reading instruction during a school day and, in particular, the amount of reading instruction that should be spent on fluency.

A Study of Text Effects on Second-Grade Readers' Fluency Development

This project was a follow-up to the study of scaffolded texts (Hiebert, 2005b) described earlier. This second study examined fluency gains when the length of the intervention with scaffolded texts was half of the duration used in the first study. The two studies were conducted with different grade 2 cohorts at the same schools. Data from the two studies were compared to assess effects of treatment length on fluency.

The study was similar in design to the first investigation (Hiebert, 2005b) where students read repeatedly using different types of text for a portion of the daily reading period. One group read from literature with a high number of rare words, while the other group read from a set of “scaffolded” texts—texts with a small percentage of rare words. The rare words that occurred in the scaffolded texts always appeared more than once in a given text. In both studies, students reading the scaffolded texts also read literature, but repeated-reading activities occurred only with the scaffolded texts. Unlike the first study, in which repeated reading with scaffolded texts occurred over a 20-week period, the second intervention with the scaffolded texts occurred for 10 weeks.

Although the relationship between comprehension and fluency is strong (Fuchs et al., 1993; Pinnell et al., 1995), concerns have been voiced within the reading education community that fluency practice may result in faster reading but have no appreciable gains—and may even have negative effects—on comprehension (Underwood & Pearson, 2004). The hypothesis underlying the the study under discussion is that fluency interventions, when conducted with accessible but engaging texts, will sustain students' comprehension. When literature is used for fluency treatments (as in the comparison group in the present research), significant effects have been found for comprehension, although not for fluency (Hiebert & Fisher, 2005). In this study, the prediction was that students whose repeated reading occurred with the scaffolded texts would have comprehension performances equivalent to students whose repeated reading occurred with literature texts. Although prosody data

were gathered, no hypotheses were made regarding effects of text type on expressiveness in oral reading or prosody.

Intervention Participants, Procedures, and Materials

The literature text (literature) group consisted of 54 students from four second-grade classes in one school; the group whose repeated-reading experiences occurred with scaffolded texts consisted of 45 students from three classes in a second school. A passive-control treatment that comprised a set of classrooms in a third school was eliminated when state mandates made it necessary for this school to implement a reading intervention or risk state and federal sanctions. In lieu of a passive-control group, students' changes in fluency in the two intervention groups were compared to data from the previous study (Hiebert, 2005b), as well as to national norms (Hasbrouck & Tindal, in press).

The intervention occurred over a 10-week period during the second half of the school year. The teachers of students in both groups had been trained in the implementation of FORI with literature texts at the beginning of the school year. The FORI procedure with a text begins with teacher modeling of fluent reading in a guided reading lesson. The reading is followed by comprehension activities and a review of key vocabulary from the story. During one day of the cycle with a text, children reread the text with a partner. Another day of the cycle is devoted to extension activities for typically developing students and repeated reading of the text for struggling students. During the 10 weeks of the study, the texts in the basal literature anthology were the content for a teacher-guided lesson for both groups. During the partner reading and the extension portion of the FORI cycle, the students in the scaffolded-text group read and reread scaffolded texts, rather than the literature.

The 10 literature texts that were read over the 10-week intervention came from the district's adopted basal reading program (Pearson et al., 1998). The scaffolded texts came from a set of science and social studies texts (Hiebert, 2003). Topics came from national content standards and represented major disciplines in each content area (i.e., life, earth, and physical sciences in science and civics, geography/economics, and history in social studies). A topic of a content area was made up of five texts, each from 90 to 110 words in length. For example, Excerpt 3 in Table 10.1 comes from a set of five texts on the topic of "Brave Americans."

A HyperCard application (Hiebert & Martin, 2003) was used to establish the number of unique or different words within a text, high-

frequency ratings of unique words, and the decodability patterns of unique words. Data for the two types of text are presented in Table 10.2.

Table 10.2 shows that the scaffolded texts had fewer unique words than the literature texts: 13 new unique words per 100 words in scaffolded texts and 18 new unique words per 100 words in literature texts. The 1,000 most frequent words accounted for a higher percentage of scaffolded texts than literature texts: 75% for the former and 50% for the latter. The greatest difference between the two types of text was in the number of rare multisyllabic single-appearing words: 19% of the literature corpus and 1% of the scaffolded-text corpus.

This follow-up study used similar assessment procedures as those in the previous study (Hiebert, 2005b). Graduate students in reading education who had been trained in administration of clinical assessments, including the Gray Oral Reading Test (GORT; Wiederholt & Bryant, 2001), individually assessed all students at the beginning and end of the intervention. Students were asked to read a passage aloud and then to give an oral summary of the passage. Administration procedures of the GORT (i.e., counting substitutions, insertions, and omissions as errors and discontinuing the task when students made 10 consecutive oral-reading errors) were used for the recording of miscues. Test administrators also gave students a rating for phrasing and expressiveness, or prosody, during the oral reading, using the four-point scale developed

Table 10.2. Features of literature, scaffolded, and science texts

| Text type | Total number of words per text | Number of new, unique words per 100 | Percentage of high-frequency words | Percentage of multisyllabic words (singletons) |
|---|--------------------------------|-------------------------------------|------------------------------------|--|
| Literature texts (Pearson et al., 1998) | 727 | 18 | 51 | 27 (19) |
| Scaffolded texts (Hiebert, 2003) | 486 | 13 | 75 | 9 (1) |
| Science (Badders et al., 2000) | 708 | 11 | 61 | 20 (98) |

for the special study of the 1994 National Assessment of Educational Progress (NAEP; Pinnell et al., 1995). Test administrators recorded students' oral summaries, which were subsequently evaluated according to the scale used for open-ended comprehension items on the NAEP (Donahue, Finnegan, Lutkus, Allen, & Campbell, 2001). This score was used as the index of comprehension.

Findings and Conclusions for the Follow-Up Study

Students' fluency scores were computed as the number of words read correctly per minute (WCPM). The fluency scores of students in the scaffolded- and literature-text groups were examined in several ways: (1) mean differences between groups, (2) weekly average gains in the 10-week intervention compared to gains in the previous 20-week intervention (Hiebert, 2005b), and (3) changes in attainment of benchmark levels of fluency. In addition, mean differences on comprehension and prosody scores were examined.

Means for WCPM (and standard deviations) were as follows: literature text pretest 37.5 ($SD = 34.6$) and posttest 62.9 ($SD = 38.9$), and scaffolded text pretest 53.1 ($SD = 30.4$) and posttest 84.2 ($SD = 32.3$). Fluency scores were analyzed using analysis of covariance with pretest scores as covariate. The adjusted means for the two groups—69.7 WCPM (literature) and 76.0 WCPM (scaffolded)—were significantly different at the .09 level. Both groups made substantial gains over the 10-week intervention. However, the gains for students using the scaffolded text were somewhat greater than those of the literature-text group.

On the comprehension measure, scaffolded-text students' mean posttest scores (2.3) were slightly higher than those of students in the literature group (2.0) but not significantly different. As predicted, students in the scaffolded-text group performed well on the comprehension measure. On the prosody measure, the adjusted means for the two groups (literature = 2.8; scaffolded = 2.9) were not significantly different.

The next set of analyses examined the average gain per week made by students in the two treatments. Data on the average weekly growth of reading speed for students in both the first (Hiebert, 2005b) and second studies appear in Table 10.3.

Fuchs et al. (1993) have suggested that a weekly increase of at least 0.5 WCPM above typical growth is needed if struggling readers are to attain satisfactory fluency levels. According to available norms (Hasbrouck & Tindal, in press), the typical weekly growth of second graders is 1.2

Table 10.3. Mean gains in words read correctly per minute (WCPM) over intervention periods

| Text type | Weekly gain over 10 weeks | Weekly gain over 20 weeks (Hiebert, 2005b) |
|---------------------|---------------------------|---|
| Scaffolded texts | 3.1 | 1.7 |
| Literature texts | 2.5 | 1.5 |
| Typical Instruction | 1.2* | 1.2 |

words per week, a rate that students in both intervention groups exceeded. The average gain of 2.5 words per week for the literature-text students exceeded the typical growth rate by more than a word per week. The scaffolded-text students' gain of 3.1 words per week was 2.6 times that of the typical expected growth.

The data in Table 10.3 also show that students in the 20-week intervention did not attain the weekly growth rate of students in the 10-week intervention. The inability of students to sustain the higher growth rate over a 20-week period may be explained by the phenomenon described earlier in which students who are approaching automaticity do not appear to benefit from longer and more fluency sessions (Logan et al., 1999). The final set of analyses examined students' attainment of fluency standards. Because Reading First legislation requires that students be evaluated by the same standards, the number of students who attain particular levels is an increasingly important issue. The standards against which students' performances were examined were those reported by Hasbrouck and Tindal (in press) for the 25th, 50th, and 75th percentiles in winter and spring of second grade. Percentages of students at these three percentiles are shown in Table 10.4 for students in the literature- and scaffolded-text groups (second study only).

In both groups, approximately 15% more students reached the 25th percentile or higher at the end of the 10-week period. However, in the middle segments of the distribution, the scaffolded-text group did considerably better than the literature group. The scaffolded-text treatment increased the percentage of students reaching at least the 50th percentile by 15, while the literature group increased by only 1 percent.

When all of the analyses of fluency are considered (mean differences, average weekly growth, and attainment of standards), students who read scaffolded texts for fluency practice had an advantage over peers who

Table 10.4. Attainment of standards: Cumulative percentages at three percentile levels by text type and time period

| Percentile levels | Literature winter (2002) | Literature spring (2002) | Scaffolded winter (2002) | Scaffolded spring (2002) |
|-------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 75 | 2 | 7 | 7 | 9 |
| 50 | 21 | 22 | 25 | 40 |
| 25 | 36 | 50 | 61 | 76 |

used literature texts. The present study confirmed the NRP's (NICHD, 2000) conclusions that repeated, guided reading of text supported second graders in attaining higher than expected levels of fluency. When texts had a degree of control for number of rare multisyllabic words, students had higher fluency gains than those who read from texts that were not controlled for rare multisyllabic words. Even a 10-week intervention with scaffolded texts was sufficient to change children's standing when evaluated by the benchmarks in a national sample (Hasbrouck & Tindal, in press). In both intervention groups, an additional 14–15% of students reached the 25th percentile of a national norming sample. The scaffolded-text intervention, however, was effective in moving a sizable group of students—15% of the sample—from the 25th to 50th percentile groups. Given the stability of children's reading relative to their peers in typical instructional settings (Juel, 1988), this latter finding may be especially important.

Equally critical, the comprehension scores of students in both groups also improved. Students using scaffolded texts, where high-frequency words accounted for more of the unique words than in the literature texts, had higher, but not significantly higher, gains in comprehension. The present findings suggest that fluency and comprehension can be supported in the same instructional events.

Implications for Educational Practice

The NRP (NICHD, 2000) concluded that fluency must be part of instructional programs if a significant portion of American students is to achieve proficient or even basic reading standards. Their emphasis was on the instructional activities that support increased fluency: repeated and guided reading. The review of literature and results of the study re-

ported in the previous section point to the importance of two additional elements: features of texts used for fluency instruction and the allocation of time. The greatest gains in the archival studies on repeated and guided reading used in the NRP's meta-analysis came from texts emphasizing highly frequent words and words with common and consistent letter-sound patterns. Texts for fluency development should maximize these words and minimize rare words, especially those with complex multisyllabic structures, so that students have a higher probability of becoming automatic with high-frequency words and words that have common, consistent letter-sound patterns.

Although the study requires substantial replication and extension, it showed that the best results for fluency were obtained when scaffolded texts were used over short practice periods rather than when literature with uncontrolled vocabulary was used over extended practice periods. In the interventions using scaffolded texts with high percentages of high-frequency words, students continued to have guided reading lessons with literature texts from their basal program. However, for at least a portion of the reading and language arts period, students in the scaffolded-text group were involved with texts that had a high percentage of words that account for the majority of words in written English and words with common, consistent letter-sound relationships. Even though scaffolded texts were used for a small portion of the school day and for a relatively small portion of the school year, this opportunity made a difference beyond the repeated and guided reading practices described by the NRP (NICHD, 2000). Fluency practice is not the sole aim of an elementary school curriculum; it is one of several aims. Fluency practice that is too long may be counterproductive.

A question that educators frequently ask is whether texts that consist almost entirely of highly frequent and phonetically regular words also can be engaging and merit rereading for different purposes. In a previous era, controlled texts were common in schools. Such texts (see Excerpt 1 in Table 10.1) fell out of fashion because the stilted language that came from an overabundance of highly frequent words was seen to have negative effects on comprehension (Beck, McKeown, Omanson, & Pople, 1984). Even though the studies that considered controlled vocabulary and comprehension were few, their findings were generalized to developmental levels and aspects of reading that were not part of the investigations. Neither did these generalizations consider the role of genre. Whereas authors of children's literature do not use a word

repeatedly to describe the trait or action of a character in a narrative text—the genre used in the studies on negative effects of controlled vocabulary on comprehension—writers of informational text do repeat words as they describe a concept (Hiebert, 2005c).

Because repetition of core vocabulary is a feature of informational text, several research projects (Moje et al., 2004; Pearson, Cervetti, Hiebert, Bravo, & Arya, 2005), including the line of work reported on in this chapter (see also Hiebert, 2005a) have selected informational texts for the instruction of fluency and vocabulary comprehension. Pearson et al. (2005) have reported that science texts that were written with high percentages of high-frequency and phonetically regular words (approximately 97% of the unique words) can have a positive effect on vocabulary learning, in addition to fluency development. A considerable number of HI/LV texts, such as the Frog and Toad series, from which Excerpt 5 in Table 10.1 comes, also show that engaging narrative texts can be written where vocabulary is controlled.

As standards related to fluency—which are included in Reading First mandates (NCLB, 2002)—become more widespread, publishers of mainstream textbook programs may begin addressing the scaffolded texts that are now confined to a handful of projects. Until scaffolded texts are part of mainstream reading programs, educators who recognize that particular types of texts are needed for fluency development will need to select carefully from available options. The kinds of texts that are needed for integrating focused fluency practice during reading instruction can come from several sources, some of which are already in classrooms. However, before identifying sources of texts, a general guideline about the features of texts may be in order. The long-standing guideline regarding instructional-level text applies. That is, there should be fewer than a handful of infrequent multisyllabic words per 100 words of running text. This guideline does not have to be applied rigidly. Some multisyllabic words that appear rarely in texts represent familiar concepts (e.g., words such as *chickens* and *rabbits*). However, texts containing a substantial number of multisyllabic words that are beyond children's experiences (e.g., *severed* or *imprint*) are unlikely candidates for fluency practice.

Literature texts within a basal program will vary in the numbers and types of rare words. Consider two texts that are excerpted in Table 10.1 from a second-grade basal program (Afflerbach et al., 2000). In Excerpt 6, the literature selection from *Cool Ali* (Poydar, 1996), numerous words are likely to be unfamiliar to second graders, including words such as

chattered, thrilled, chilled, squealed, rippling, breeze, and haze, and onomatopoeic words such as *whhee*, *brr*, and *Oooo*. Excerpt 7, from *The Park Bench* (Takeshita, 1988), illustrates a text that is more likely to be appropriate for developing fluency. The phrase with a rare word—*motor cart*—refers to a concrete object pictured in the text's illustrations. This text is likely to be a good context for experiencing fluent reading. Even though the teacher's edition of this program suggests that the two texts be treated similarly, their differing demands for word recognition and vocabulary serve different functions in a reading program.

Many literature-based programs include at least one or two HI/LW texts in their anthology components. In the basal programs that were adopted recently in California and Texas, three of the six second-grade programs included selections from Arnold Lobel's *Frog and Toad* series. Even though the teacher's editions give the same comprehensive lesson plans for every text, HI/LW texts such as *Frog and Toad* vary in conceptual demands from *Cool Ali* (Poydar, 1996) or *The Mysterious Tadpole* (Kellogg, 1977). HI/LV texts were initiated after Dr. Seuss (1960) proved with *Green Eggs and Ham* that an inventive text could be written with the Dolch 220 most frequent words. Excerpt 5 in Table 10.1 from *Frog and Toad Together* (Lobel, 1979) shows that HI/LV texts emphasize high-frequency and phonetically regular words.

Another source of texts for fluency practice that already exists in classrooms is science texts. A sample of text from a widely used science textbook was analyzed for the presence of high-frequency words and rare multisyllabic single-appearing words (see Table 10.1). Although the percentage of multisyllabic words is higher than in scaffolded texts, the percentage of rare multisyllabic single-appearing words is lower than in literature texts. Excerpt 4 in Table 10.1 from a science textbook also shows one of the hallmarks of good informational text: Rare words that represent critical concepts are repeated often and in close proximity. Such features provide the repetition that students require to learn and remember new vocabulary (McKeown et al., 1985).

In instructional settings where students require additional support to become fluent readers, teachers may need to go a little further afield than existing programs. In some locations, teachers may find that the store-rooms of county and district offices have old textbook programs. As the re-analysis of the NRP fluency studies showed (Hiebert & Fisher, 2005), textbooks prior to the late 1980s and early 1990s exaggerate high-frequency words. Although these texts have often been viewed as less engaging (Bruce,

1984), their use for short periods of time may support struggling readers to perform smoothly and fluidly. In addition, texts called “skill builders” were written for, and used in, some of the studies in the archival literature. Several of these programs are still published, as well as newer programs with informational content (see Excerpt 3 in Table 10.1).

A guideline in selecting from the available materials should be that texts have few rare words that represent unfamiliar concepts in texts used for fluency instruction and practice. Fluency practice should not dominate the curriculum, but when it is the focus, the texts should give students an opportunity to read fluidly without having to grapple with the pronunciation and meaning of many rare multisyllabic, single-appearing words. The research that has been reviewed and presented in this chapter indicates that, when texts with such characteristics also present information, students’ comprehension can be supported along with fluency.

Conclusions

Numerous questions remain about the development of fluency during children’s elementary school years. This chapter has focused on two topics that the NRP (NICHD, 2000) does not address: the role of text and allocation of time for fluency practice. If fluency is to approach levels expected in current policy initiatives, levels that the NRP indicates are possible, then text features cannot be ignored. Different kinds of text serve different functions in a reading program. Texts that support fluency are not intended to displace literature. However, just as literature is critical in achieving goals of strategic thinking and expanded vocabularies, so too is text with few rare multisyllabic, single-appearing words useful in increasing students’ fluency with the core words that account for significant percentages of the total words in text.

Questions for Discussion

1. Assume that you’re part of a committee in a school district reviewing texts for use in a comprehensive reading program. Based on the information in this chapter, what functions within the program might the following texts serve?
 - (a) texts where the ratio of multisyllabic, rare words is approximately 7 for every 100 words of text; and
 - (b) texts where the ratio of multisyllabic, rare words is approximately 2 for every 100 words of text.

2. Among the students with whom you work, identify
 - (a) those who could benefit from experiences with the scaffolded texts that are described in this chapter, and
 - (b) those who are reading at sufficient fluency and comprehension levels where such texts are not necessary.
3. Select a sample of texts that are commonly used in the educational agency in which you work. Identify the texts that meet the definition of “scaffolded texts” that is described in this chapter.

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