SpellRead: Every Student Reading Efficiently

I.   Meeting a Critical Need: Closing the Opportunity Gap

   A.   The Opportunity Gap
   B.   Reading Intervention to Close the Gap

II.   Oral Language Development Is Natural—Reading and Writing Are Not

   A.   Oral Language Is Brain-Based
   B.   Reading Is Also Brain-Based

III.   *SpellRead*: Bridging Oral and Written Language

   A.   Phonemic Automaticity: Hearing the Sounds
   B.   Phonics: Spelling the Sounds
   C.   Automaticity: Achieving Efficiency
   D.   Fluency: Reading with Accuracy, Prosody, and Speed
   E.   Vocabulary: Gaining the Power of Language
   F.   Comprehension: Reading for Meaning
   G.   Writing: Capturing Oral Language on Paper

IV.   *SpellRead*'s Carefully Designed Instruction

   A.   Meticulously Scaffolded and Sequenced Instruction
   B.   Daily Small-Group Instruction over the School Year
   C.   Working and Reworking Skills in a Supportive Instructional Setting
   D.   Ongoing Assessment and Professional Support
   E.   Evidence of *SpellRead*'s Effectiveness
   F.   Essential Conditions for Success

SpellRead: Every Student Reading Efficiently

SpellRead is an intensive and highly specific one-year reading intervention that enables struggling readers to reliably develop phonological automaticity, together with reading fluency and comprehension. *SpellRead* is designed for students who have not been able to build robust connections between their oral and written language abilities through the core curriculum. Backed by independent research, *SpellRead* combines rigorous phonemic and phonetic activities with active reading and writing to develop automaticity, fluency, vocabulary and reading comprehension. *SpellRead* is aligned with the current reading research and selected as one of only four reading intervention programs to be included in the Power4Kids study (Torgesen et al., 2006; Wahl, 2003).

This White Paper explains *SpellRead*'s distinctive features and research-based design. These are summarized in the following statements taken from the paper:

- *SpellRead* effectively bridges the oral language–written language divide (p. 4).
- *SpellRead* builds a robust connection between oral language and phonology in a way that makes sense to students. This means beginning with sounds, not with letters (p. 8).
- *SpellRead* students master the sounds of English in order from easiest to most difficult through activities that work and rework phonological skills in engaging ways, maintaining a high degree of student time-on-task (p. 8).
- Without phonological automaticity, the word-identification process remains inefficient and students develop other idiosyncratic compensatory strategies for remembering or decoding words (p. 9).
- When automaticity is accomplished, students are freed to focus their energy and attention on vocabulary building, comprehension, and retention rather than having it consumed in the process of lifting words from the page (p. 10).
- Phonological automaticity and reading fluency are necessary but not sufficient conditions for reading comprehension because decoding printed words *at the word level* and making meaning of them *at the language level* involve two different sets of skills (p. 12).
- *SpellRead*'s Active Reading design is based on research that shows that students need to develop appreciation for text through extensive and ongoing experiences in hearing and discussing texts, with explicit instruction about concepts and vocabulary (p. 13).
- As *SpellRead* students learn to write, their spelling relies upon phonology first, visual memory second (p. 13).
- *SpellRead*'s comprehensive instructional approach strengthens two integrated sets of essential reading skills: the ability to identify words accurately and confidently based on phonological automaticity and fluency, and the ability to form meaning once the words are recognized, based on vocabulary development and comprehension strategies (p. 14).

I.   Meeting a Critical Need: Closing the Opportunity Gap

Reading scores of U.S. public school students, which have remained relatively stable from 1992 through 2005, reveal that a majority of students lack solid reading skills. Specifically, in 2005,

- fewer than one-third (31%) of fourth- and eighth-grade students could demonstrate an overall understanding of a text by making inferences, drawing conclusions, making connections to their own experiences and to other readings, and identifying some of the devices that authors use in composing text—the *Proficient* level on the National Assessment of Educational Progress (NAEP);
- 36% of fourth-grade students and 27% of eighth-grade students performed below the *Basic* level, indicating that they could not consistently demonstrate an understanding of the literal meaning of what they read, much less make relatively obvious connections between the text and their own experiences, extend the ideas in the text by making simple inferences, or draw conclusions based on the text; and
- over one-fourth (27%) of 12th-grade students scored below *Basic,* meaning that they were unable to recognize the sequence of plot elements, retrieve information from a highly detailed document, connect document information to real-life contexts, or make simple inferences from explicit details in a document (National Center of Education Statistics, 2006; 2007b).

Adults in the U.S. do not fare much better. Results for the prose literacy section of the 2003 National Assessment of Adult Literacy (NAAL), administered to a nationally representative sample of 216 million U.S. adults, showed that

- only 13% of adults surveyed could perform complex and challenging literacy activities (*Proficient* level);
- another 44% could perform moderately challenging literacy activities (*Intermediate* level);
- 29% could perform simple and everyday literacy activities (*Basic* level); and
- 14% could not demonstrate more than the most simple and concrete literacy skills (*Below Basic* level) (National Center for Education Statistics, 2007a).

A.   The Opportunity Gap

While little has changed since 1992 in terms of the proportions of students and adults who master reading to the level of proficiency compared with those who do not, what has changed, and continues to rise rapidly, is the level and complexity of literacy skill demanded by participation in society and the labor market in the twenty-first century. The *opportunity gap* continues to widen between those with adequate levels of literacy and those without.

For example, twelfth-grade students who scored only at the *Basic* level or below on the NAEP, along with adults who scored at *Basic* or *Below Basic* on the NAAL, will have great difficulty reading and comprehending texts like loan applications, employee benefits documents, tax forms, vehicle warranties, insurance policies, computer user manuals, and many newspapers (Daggett, 2003). Compared to their counterparts in past economic eras, many more twenty-first century workers will need to be able to

- access information from a wide variety of sources;
- select, comprehend, organize, interpret, analyze, synthesize, and evaluate information;
- communicate effectively by writing, speaking, and representing information;
- accomplish tasks using information, system technologies, and personal and interpersonal resources;
- produce and apply new usable knowledge;

- shift between working independently and working collaboratively as part of a problem-solving team;
- self-regulate and monitor their own thinking and learning; and
- examine multiple perspectives on problems and solutions (Smith et al., 2000).

As school systems continue to adjust to these demands, students in middle school and high school will be expected to read more difficult texts, do more with texts of different types, and handle larger amounts of reading (Smith et al., 2000). In the meantime, low reading scores are correlated with high dropout rates. In 1998, 22% of white students, 44% of African-American students, and 46% of Latino students did not graduate from high school on time—proportions that are unacceptably high in an economy with fewer low-skill jobs available. Nationally, researchers estimate the overall high school graduation rate to be between only 66.6% and 71% (Alliance for Excellent Education, 2006; Barton, 2005; Greene, 2002; Sum et al., 2003; Swanson & Chaplin, 2003).

B.   Reading Intervention to Close the Gap

Corresponding large national data sets are not available to estimate the percentage of U.S. students or adults who can use oral English language proficiently. It is probably fair to assume, however, that large portions of the population speak and understand oral language better than they read and comprehend written language.

To the extent that the opportunity gap begins as a disparity between a student's oral- and written-language skills, *SpellRead* is designed to effectively bridge the oral language–written language divide. *SpellRead* enables poor readers to attain reading fluency and writing skills that match their oral language abilities, so that they are ready to benefit from texts and instruction that will further increase their vocabulary, content-domain knowledge, and reading comprehension.

II.   Oral Language Development Is Natural—Reading and Writing Are Not

Oral language includes receptive language (the ability to listen to and make sense of English speech) and expressive verbal language (the ability to speak and make oneself understood in English), which children develop naturally during their earliest years. Many students who can speak, listen, communicate, think, and understand do not learn to read efficiently by third grade. Speech develops naturally, while reading and writing must be explicitly taught and learned through conscious, applied effort (Lyon & Chhabra, 2004; Shaywitz & Shaywitz, 2004). When children in the earliest grades do not receive adequate explicit, systematic, and comprehensive instruction that enables them to master the multiple skills and processes involved in reading, they can fall and remain behind. These skills include abilities to

- hear, replicate, and manipulate *phonemes*—the separate sounds in words;
- associate sounds with letters (*phonics*, the alphabetic principle);
- automatically and fluently read words (including nonsense words);
- build vocabulary; and
- understand what they read (reading comprehension) (National Reading Panel, 2000).

Students who have fallen behind in these skills can be misdiagnosed as learning disabled, but most often the cause of poor reading performance is difficulty with *phonological* coding—the ability to link individual phonemes with their alphabetic spellings—not visual deficits or problems with meaning or language structures. Unless intensive, supportive intervention measures are taken, students who have fallen behind will remain inefficient readers.

While early intervention in grades K–2 is optimal, evidence abounds that concentrated, systematic intervention designed to foster phonemic awareness in older struggling readers is effective at any age and can significantly reduce the occurrence of reading disability diagnoses and help the majority of struggling readers close the oral language–written language gap and be ready to maintain grade-level performance. Effective, intensive intervention over the course of a school year is cost-effective because it lessens the numbers of students assigned to special education, among many other benefits (Blachman, 2000; Blachman et al., 2004; Brady & Moats, 1997; Foorman & Torgesen, 2001; Harm, McCandliss, & Seidenberg, 2003; Hirsch, 2003; Liberman & Shankweiler, 1986; Lyon, 1998; National Reading Panel, 2000; Moats, 1999, 2004; Shaywitz & Shaywitz, 2004; Snow, Burns, & Griffin, 1998; Stanovich, 1986; Tallal, 2000; Torgesen, 2002a; 2002b; Torgesen & Mathes, 1998; Scanlon et al.,2005; Vellutino, Scanlon, & Spearing, 1995; Vellutino et al., 1996; Vellutino & Scanlon, 1998; Vellutino, Scanlon, & Tanzman, 1998).

SpellRead's instructional program design is based upon the understanding that intricate, automatic, and efficient orchestration of multiple neurological processes and sub-processes make both oral language and reading possible. *SpellRead*'s intensive intervention trains the brain to build connections between its phonological and oral language systems so that students are able to read and write at the level at which they already speak and listen.

Once this has been achieved, when students encounter a word in text that is already part of their oral-language lexicon—a word that they have heard and for which they have semantic and syntactic connections (they know the word's meaning and usage)—they are able to read the word because to see it is to "hear" it. Conversely, when they encounter a new word through their oral environment, they are able to "see" the word—to mentally visualize its spelling or an approximation of the spelling—and can then associate it with its meaning and usage more quickly. This enables students to move forward academically, continuing to build all four important types of vocabulary: listening, speaking, reading, and writing vocabularies (Ehri, 1998; Pikulski & Chard, 2005).

A. Oral Language Is Brain-Based

Humans are uniquely adapted to use complex language and have been doing so for thousands of years through specialized brain organization and vocal tracts. Systems for encoding the elements of human speech into written languages, on the other hand, are relatively recent inventions, dating back only several millennia. Even today, while all peoples in the world have oral language, there are a few who continue to be without written language, having not yet invented or adopted a system for encoding their speech into symbolic visual representations (Brady & Moats, 1997; Liberman, 1999).

A superficial view of speaking and listening might categorize these activities as either primarily motor or primarily acoustic. We use motor processes of the lungs, throat, lips, mouth, and tongue to produce the sounds of speech, and we use the aural/auditory capacities of the ears to perceive these sounds. But the functions by which speech sounds become language—syntax (grammatical structures) and semantics (meaning)—are processes of the brain, not of the eyes or ears.

Perception of speech is easy, not because the process is simple but because the human brain is so well adapted to this complex task. When we listen to another person speak in our own language, our short-term memory attends to and processes words and word sequences, holding them long enough to search for information stored in long-term memory that will help us attach meaning to the speech we hear. When we formulate our own speech—or think our own thoughts privately—we utilize phonological systems in the brain to "hear" the words in our minds, whether or not they are then actually spoken aloud.

Thus, language is a major vehicle for thinking. The degree to which complex receptive and expressive vocabulary is acquired affects the degree to which critical thinking can evolve, since deliberate thinking involves "hearing" words in one's mind as they are used to construct explanations, analyses, syntheses, evaluations, interpretations, arguments, and questions (Boroditsky, 2001; Bowerman & Levinson, 2001).

In spoken interactions the focus is on whole words and meanings, so phonemes must be combined at a rate sufficient for working memory to process whole words and word sequences, accessing their meaning from long-term memory. Therefore, the individual sounds of speech that combine to produce words are overlapping, coarticulated, and not consciously noticed. When we say, "Look at the big dog," we chunk the sounds together into successions of words, rather than recognizing strings of separate sounds—"/L/-/oo/-/k/-/a/-/t/-/th/-/e/-/b/-/i/-/g/-/d/-/o/-/g/."

If speaking was executed like spelling, it would move so slowly that the listener's working memory, which can only process about five to seven chunks of information at once, could not obtain meaning from the many separate phonemic parts. Instead, efficiently coarticulating the sounds as words in speech allows for fluidity in communication.

Therefore, since efficient speech communication and understanding do not require any conscious awareness of the underlying system of arranged and rearranged articulatory gestures producing the phonemes that form words, children with intact neurological systems acquire spoken language fairly effortlessly within their social milieu. There is no need to focus on anything beyond the words and their meanings. Motivation to learn stems from the desire to communicate, and the articulatory gestures of speech themselves are used with automaticity—no attention is necessary (Liberman, 1999; Lyon, 1998; Moats, 1998).

B. Reading Is Also Brain-Based

While the phonology for reading written language is laid down through the learning of speech, nothing in the process of mastering speech requires the child to pull individual words apart into their component phonemes or to become aware of the alphabetic structure through which oral language can be represented. In fact,

> *nature has provided a conundrum here: What is good for the listener is not so good for the beginning reader. Although spoken language is seamless, the beginning reader must detect the seams in speech, unglue the sounds from one another, and learn which sounds (phonemes) go with which letters. (Lyon, 1998, p. 15)*

Therefore, the elements of written language must be explicitly introduced, systematically recognized, and repeatedly manipulated through practice during instruction in reading and writing. And while some children gain facility with the phonologic system of reading and writing quickly, many others do not (Blachman, 2000; Brady & Moats, 1997; Liberman, 1999; Snow et al., 1998).

Just as speaking and listening are only superficially motor and auditory processes, so reading and writing are only superficially visual. Visually perceived sequences of letters are translated by the brain into sounds, syllables, and words that link encoded language with oral language, so that the words that are read are "heard" in the mind and connected to their meanings (Liberman, 1999). Reading, therefore, is

> *a multi-component process subsumed by several functional brain networks, each recruited for a specific purpose: phonologic processing, orthographic processing, morphologic and semantic processing, and syntax and discourse processing. As the brain learns to read, the component processors must be educated to perform specific functions well so that smooth, automatic functioning of the reading brain is possible. Well-designed lessons will include a number of components: explicit teaching about letters, speech sounds, phonics and spelling, vocabulary, and comprehension, integrated into a coherent, systematic progression. (Moats, 2004, pp. 841–842)*

Phonology, linguistic awareness, and language proficiency are primary to the reading process, while visual and tactile-kinesthetic pathways are secondary. As Moats (2004) observes, "to teach reading…is to teach

language processing by ear, by voice, by eye, and by hand…Once children learn to notice the internal details of the spoken word, they are more likely to be successful at mapping print to speech" (pp. 840, 842).

The following table contrasts some essential characteristics of oral language with those of written language:

Oral Language	Written Language
Based on phonology. A finite set of meaningless articulatory gestures—sounds—can be combined in infinite ways to produce syllables, words, sentences, syntax, meanings.	Based on phonology. A finite set of meaningless graphemes—letters—can be combined in infinite ways to represent sounds in syllables, words, sentences, syntax, meanings.
Brain-based function—only superficially motor and auditory.	Brain-based function—only superficially visual.
Develops naturally.	Must be taught.
Easy to learn.	Difficult to learn.
Speech is language.	The alphabetic principle only refers to language—represents it, encodes it.
Units of any particular language are human-contrived artifacts.	Alphabetic symbols are human-contrived artifacts.
Does not require awareness of separate phonemes.	Requires awareness of separate phonemes and their various graphic representations.

III. *SpellRead*: Bridging Oral and Written Language

Given the similarities, differences, and relationships between oral and written language noted above, *SpellRead* is designed to actively, deliberately, and intensively engage students in a process that starts with oral language and progresses to written language. Every 60-minute *SpellRead* class includes Linguistic Foundations (35 minutes), Active Reading (19 minutes), and Writing Connections (six minutes). Phonemic and phonetic activities are followed by time devoted to active reading and freewriting using language-rich books that have been carefully selected and sequenced based on vocabulary, difficulty level, and interest.

SpellRead's multi-component lesson structure is designed in line with what is known about teaching the brain to read (Moats, 2004). *SpellRead* intervention works and reworks skills in a scaffolded progression of instruction that builds sustainable fluency and comprehension gains upon which students can move forward to develop further vocabulary, content-domain knowledge, and comprehension skill.

A.   Phonemic Automaticity: Hearing the Sounds

Individual sounds, or *phonemes*, are the building blocks of language. The English language has only 44 separate phonemes, which can be combined and ordered in infinite ways to produce hierarchical arrangements of syllables, words, phrases, sentences, and syntax that ultimately convey ideas and meaning (Liberman, 1999).

While learning to speak does not require conscious awareness of the individual sound segments in words, learning to read relies on *phonemic awareness*—the ability to notice, reproduce, and manipulate these individual sounds so that they can then be represented by letters. Phonemic awareness developed to the point of automaticity lays the critical foundation for reading skill development. Without phonemic

automaticity, reading, spelling, and vocabulary skills are slowed and students fall and remain behind in their academic growth.

Phonological aptitude, which underlies phonemic awareness, is distributed across the population in a normal curve just as are talent in music, athletic coordination, height, or eye color. Some children are able to hear, identify, reproduce, and manipulate phonemes early and with relatively minimal instruction, while many others require additional intensive and explicit instruction over time to acquire aspects of language that their peers accomplish much sooner. Children who do not master phonemic awareness by first grade are at risk of having difficulty learning to read. Older students and adults who are poor readers typically continue to demonstrate limited phonemic awareness (Bashir & Scavuzzo, 1992; Brady & Moats, 1997; Nation & Snowling, 2004; Moats, 2004; Shaywitz, 2003; Snow et al., 1998; Torgesen & Mathes, 1998; Vellutino et al., 1998; Vellutino et al., 2000; Winskel, 2006).

Phonological difficulties are neurological in nature and have no association with intelligence. Biological factors, including childhood ear infections, interact with and are influenced by experiences so that the ease with which a child develops phonemic awareness depends upon a combination of genetic and environmental factors. For example, vocabulary size plays a role in phonemic awareness. The larger a child's vocabulary in the early school years, the more likely the child is to have developed a more refined within-word discrimination ability—the ability to hear the different sounds in words and to compare words to each other based on sounds within the words (Ehri et al., 2001; Foorman & Torgesen, 2001; Goswami, 2001; National Reading Panel, 2000; Metsala, 1999a; 1999b; Metsala & Walley, 1998; Moats, 1999; Snow et al., 1998; Walley, Metsala, & Garlock, 2003).

SpellRead builds a robust connection between phonology, oral language, and reading in a way that makes sense to students. This means beginning with sounds, not with letters. Because many of the 44 separate sounds of English can be represented by more than one letter or combination of letters, *SpellRead* does not teach that "letters have sounds," since in fact they do not. Nor does *SpellRead* make use of intermediary rules that are not necessary for learning sounds. The focus is always on the sounds.

SpellRead students are taught first to listen to each of the 44 English phonemes and to become proficient at identifying, replicating, and manipulating those sounds. Students master the sounds in order from easiest to most difficult through activities that work and rework phonological skills to the point of automaticity. This skill work is done in a variety of engaging ways that avoid the perception of repetition and maintain a high degree of student time-on-task. As students gain automaticity with sound recognition and manipulation, they accelerate rapidly, building confidence, so that they can successfully learn to associate the sounds with letters that represent them.

Research has demonstrated that teaching from sound to print is more effective than teaching from print to sound. However, phonemic awareness instruction is most effective when it is closely linked to systematic instruction in phonics, decoding, and spelling (Moats, 2004). Recognizing, manipulating, and then spelling the sounds is effective because in and of themselves sounds are "ephemeral, short-lived, and hard to grasp, whereas letters provide concrete, visible symbols for phonemes" (Ehri et al., 2001, p. 255).

B. Phonics: Spelling the Sounds

The alphabetic principle, or *phonics*, is the system by which 26 letters (graphemes), alone and in combinations, represent the 44 basic phonemes of the English language, combining in infinite ways to encode words and meanings. Explicit instruction in phonics helps students understand that print represents the sounds of the language and establishes the phonological processing system that connects written words to their pronunciations so that the written words are "heard" in the mind.

Learning this coding system is not a simple process, however, because a regular one-to-one correspondence between letters and phonemes does not always exist. For example, when students hear

and identify the "a_e" sound in a word like *game*, they must recall whether the sound is spelled "a_e," "ai," or "ay," connecting auditory processing of phonemes with visual processing of spelling patterns (Ehri, 1999; Harm et al., 2003; Moats, 1999; National Reading Panel, 2000; Scarborough et al, 1998; Snow et al., 1998; Torgesen & Mathes, 1998).

C. Automaticity: Achieving Efficiency

SpellRead's foundational premise is that *phonology* (phonemic awareness and phonics together—the reader's "sound system"), developed to the point of automaticity, is the critical factor that enables efficient readers to effortlessly recognize and manipulate each of the individual sounds of language. Automatic phonemic/phonetic processing bridges auditory, visual, and semantic areas of the brain, linking the neurological activity of decoding written language to the reader's oral language processing abilities.

Without phonological automaticity, the word-identification process remains inefficient and students develop idiosyncratic compensatory strategies for remembering or decoding words. These can include slowing reading rate, pausing, looking back, reading aloud, re-reading, sounding out, rhyming, analogizing to known sight words, contextual guessing, and jumping over words more often than do efficient readers. Such mechanisms do not build the necessary phonological connections in the brain and are useful only if the student is motivated to work hard to make meaning of a text and is free to slow down to employ these strategies (Walczyk & Griffith-Ross, 2007).

For most inefficient readers, these strategies divert attention and effort to the word-recognition process and away from building vocabulary and comprehension. Further, the compensatory skills of inefficient readers become overwhelmed in the upper elementary grades as vocabulary, language, and concepts become increasingly complex and texts become less predictable, causing these students to fall and remain behind. Rather than reading more, such students often read less, which hinders them from becoming more skilled readers (Ehri, 1999; Moats, 2004; National Reading Panel, 2000; Shaywitz & Shaywitz, 2004; Stanovich, 1986; Torgesen, 1997; Torgesen & Mathes, 1998; Torgesen et al., 2003).

Fluent word-level skills, as demonstrated in the ability to automatically read lists of simple pseudo-words accurately and quickly, are, along with vocabulary and content-domain knowledge, the most reliable predictors of reading comprehension (Hirsch, 2003; Fuchs et al., 2001; Pikulski & Chard, 2005). *SpellRead* provides the explicit, intensive, targeted work on word-level skills that many students need in order to activate and build the appropriate processing circuits in the brain. Students who complete the 105 *SpellRead* lessons learn to

- automatically recognize and manipulate the 44 sounds of the English language;
- demonstrate mastery of
    - 18 vowel sounds and their 19 secondary spellings,
    - 26 consonant sounds and their 8 secondary spellings,
    - 37 consonant blends,
    - 16 clusters, and
    - verb endings;
- attack multi-syllabic words easily;
- bridge auditory and visual vocabularies;
- read with fluency and comprehension; and
- create writing portfolios that demonstrate growth.

Once a student recognizes sounds and spellings automatically, the brain's visual-phonological preceptors work together to turn letters into words, and words into meaning, so much so that it is not possible

for the reader to deliberately suppress the process of word recognition. This is similar, for example, to the impossibility of deliberately seeing with "double vision," because the brain translates the visual perceptions of two eyes into one image automatically. When automaticity is accomplished, students are freed to focus their energy, attention, and working memory on vocabulary building, comprehension, and retention rather than having it consumed in the process of lifting words from the page (Brady & Moats, 1997; LaBerge & Samuels, 1974; Liberman, 1999; Moats, 1999; Pikulski & Chard, 2005; Snow et al., 1998; Walczyk, Marsiglia, Johns, & Bryan, 2004).

Because efficient readers have automated the decoding process, they can read lists of unconnected words, including nonsense or pseudo-words, quickly and accurately. Words that have been encountered and decoded successfully a number of times become "chunked" and recognizable by sight as whole words, their spellings and meanings fully bonded to their pronunciations in the reader's memory. These words are then read as single units rather than as sequences of separate letters. These "sight words" are stored in and retrieved from the reader's word memory bank or *lexicon*. Sight-word learning is not a matter of memorizing shapes or visual features of words; it is an alphabetic, phonological process based upon repeated experiences with decoding a word (Ehri, 1995; 1999; Ehri et al., 2001; Shaywitz & Shaywitz, 2004).

Sight-word learning is assisted not only by sensitivity to orthography (common spellings of phonemes), but also by sensitivity to the *morphology* of English. Morphology includes the system of prefixes and suffixes that change the meanings of root words according to common patterns—e.g., *-ing* or *-ed* at the ends of verbs, *un-* at the beginning of adjectives or adverbs (Archer, Gleason, & Vachon, 2003; Curtis & Longo, 1999; Eden et al., 2004; Lyon, Shaywitz, & Shaywitz, 2003; Moats, 2004; Ramus et al., 2003; Scanlon et al., 2005; Snow et al., 1998).

Automaticity does not rely on guessing words from context. While context provides information that assists skilled readers with the usage of a word (e.g., *spring* meaning "jump," "water," or "metal coil"), or the pronunciation of a word (e.g., *read* sounding like "red" or like "reed"), it is not used by efficient readers for word identification (Brady & Moats, 1997; Moats, 1999; Snow et al., 1998; Walczyk et al., 2004).

The Linguistic Foundations portion of each *SpellRead* class provides 35 minutes of focused phonemic/phonetic lessons characterized by fast-paced, kinesthetic, auditory, and visual approaches and active student engagement as students work to reach benchmarks for mastery and automaticity. Students work with syllables and words by using vowel and consonant cards, which reinforce the connection between sounds and their spellings and serve as a powerful precursor to writing and spelling activities. *SpellRead* lessons introduce only one new sound at a time, and students master the sound by

- hearing it in multiple spoken syllables;
- replicating it;
- distinguishing it as the intitial, medial, or final sound in spoken syllables;
- recognizing it in written form; and
- using it in conjunction with previously learned sounds through various practice activities.

D. Fluency: Reading with Accuracy, Prosody, and Speed

Phonemic and phonetic automaticity are significant predictors of the ease with which students will acquire *fluency*—the ability to read connected text with the accuracy, speed, and *prosody* (appropriate rhythm, intonation, and phrasing). In addition to chunking letters together into sight words, efficient, automatic readers chunk words together into phrases to increase reading speed. Fluency can be assessed as students read aloud, through use of informal reading inventories, miscue analyses, pausing indices, running records, and reading speed calculations. Fluency is strengthened by instructional practices that include quality feedback and guidance through oral readings of text, and is positively correlated with

reading comprehension (Blachman et al, 2004; Foorman, Breier, & Fletcher, 2003; Hook & Jones, 2002; LaBerge & Samuels, 1974; Lyon, 1998; Moats, 1998; 1999; National Center for Education Statistics, 2005; National Reading Panel, 2000; Snow et al., 1998; Torgesen & Mathes, 1998).

Each daily *SpellRead* session includes a 19-minute Active Reading segment during which students take turns reading aloud from authentic, engaging, high-interest texts including both trade books and leveled readers that match the group's instructional level, age, and interests. In *SpellRead* Active Reading, students are provided with books appropriate to their fluency and comprehension levels and then seamlessly move into increasingly challenging materials as their skills improve. Trade-book libraries in the *SpellRead* program include a variety of genres and characters, topics that reflect social diversity, and themes that are relevant to students' lives.

SpellRead students are grouped according to their similar reading skill levels and instructed daily in groups of no more than five students who remain together throughout the year. In Active Reading, the teacher and students take turns reading through a book, each reading a page out loud. Because the books are matched to the skill and fluency level that all students in the group share, and because the teacher models prosody, promotes discussion in a conversational manner, and supports each reader's performance, students do not struggle to read aloud.

For example, the teacher offers quick assistance if a student cannot read a word and helps students to read with inflection to convey meaning when they appear to be focused only on reading with speed. Each book is read only once so that students are free to enjoy the experience of reading the text together, discussing its meaning, learning new concepts and vocabulary, and moving on to the next book, rather than having the perception of being drilled on reading skill.

Students' oral reading fluency continues to develop as students move through the Active Reading texts. These are trade books, which are carefully selected and sequenced by vocabulary, language, complexity, and interest level—not phonetically controlled "decodable" texts. The reading skills and fluency developed through Active Reading transfer to classroom texts, pleasure reading at home, and reading passages on standardized tests.

E.   Vocabulary: Gaining the Power of Language

Vocabulary is the link between the word-level processes of phonics and fluency and the meaning-making process of comprehension. By fourth grade, students are expected to have "learned to read" and now must "read to learn," encountering increasingly more complex texts and an explosion of thousands of new words each year, including many more academic and literary words that reach beyond their ordinary everyday oral language interactions. Students actually possess four vocabulary lexicons—the words they use when speaking, the words they use when writing, the words they understand when listening, and the words they understand when reading (Chall, 1983; Chall & Jacobs, 2003; Lehr, Osborn, & Hiebert, 2004).

Although students' individual oral vocabulary sizes when they enter school vary depending upon factors like socioeconomic background and prior experience, a student who has learned to read efficiently by third grade will add 2,000 to 3,500 distinct new words to her vocabulary each year. At a rate of two to three new words per day, students can only be explicitly taught about 400 new words per year in school through direct instruction in vocabulary words and exploration of etymology. Students and adults learn most of their new words incidentally, through multiple exposures to new terms in authentic contexts—including increasingly complex oral language environments and a variety of texts; efficient readers simply do so at a much faster pace (Chen & Vellutino, 1997; Foorman & Torgesen, 2001; Hart & Risley, 2003; Hirsch, 2003; Lehr et al., 2004; Lyon, 1998; Moats, 1999; Nation & Snowling, 2004; National Reading Panel, 2000; Snow et al., 1998; Stahl, 2003).

During *SpellRead* Active Reading, selected vocabulary is presented before reading and the story is discussed before, during, and after reading, building critical thinking and oral language skills. As students become more efficient readers, they acquire increased ability to gain and use new words more quickly, because a word that they hear and a word that they read become the same thing to them: "seen" in the mind when it is heard and "heard" in the mind when it is read.

When *SpellRead* students encounter a new word, they can recognize it phonetically and link it to the language lexicons already stored in memory. As in the familiar proverb about the value of giving someone a fish versus teaching the skill of fishing, *SpellRead* builds reading efficiency and thereby provides students with the tools to continue to gain wide-ranging vocabulary at a steady rate rather than concentrating on memorizing a limited list of discrete words.

F.   Comprehension: Reading for Meaning

Fluency, vocabulary, and content-domain knowledge together create the "three-legged stool" of reading comprehension—the ability to understand, analyze, evaluate, compare, make inferences and predictions, and draw conclusions from texts (Hirsch, 2003). Reading comprehension is the ultimate aim of *SpellRead* instruction.

Phonologic automaticity and reading fluency are necessary but not sufficient conditions for reading comprehension because decoding printed words *at the word level* and making meaning of them *at the language level* involve two different sets of skills. It is possible, for example, for an inefficient reader to derive meaning from a text , through laborious compensatory processes, and for another reader to read connected text fluently without attending to the meaning or being able to recall afterwards what the text was about—a process known as "word calling" (LaBerge & Samuels, 1974; Stanovich, 1986; Walczyk & Griffith-Ross, 2007). Rather,

> *when reading is flowing at its best, for example in reading a mystery novel in which the vocabulary is very familiar, we can go along for many minutes imagining ourselves with the detective walking the streets of London, and apparently we have not given a bit of attention to any of the decoding processes that have been transforming marks on the page into the deeper systems of comprehension. (LaBerge & Samuels, 1974, p.314)*

As students read aloud through the Active Reading books, *SpellRead* teachers model thoughtful, interactive conversation about what is read and teach students to use graphic and semantic organizers that allow students to write or draw relationships between ideas, characters, or events. Teachers also lead vocabulary-building activities, offer feedback, and modulate student inflection and speed as they read to ensure that the meaning of the text is clear.

During the Active Reading portion of a *SpellRead* lesson, the teacher demonstrates and explicitly teaches students to apply specific comprehension strategies, including
- scanning to preview text
- summarizing
- detecting sequence
- determining main idea
- predicting
- drawing conclusions
- making inferences
- visualizing
- creating concept maps

- thinking aloud
- re-reading confusing parts
- questioning during reading
- monitoring accuracy
- using prior knowledge
- applying personal experience
- using basic story structure
- using quotes, notes, and comments

Cognitive engagement is heightened as students discuss their own views and consider alternative interpretations of the texts they read (Lyon, 1998; Moats, 1999; Snow et al., 1998; Walczyk & Griffith-Ross, 2007). *SpellRead*'s Active Reading sessions are designed to utilize students' current oral language abilities in the process of making meaning of the high-interest texts that they read and discuss together. Through Active Reading students develop appreciation for text through extensive and ongoing experiences in reading, hearing, and discussing books, with explicit instruction about concepts and vocabulary.

G. Writing: Capturing Oral Language on Paper

When students have frequent, regular opportunities to write about what they read, the teacher can gain insight into their levels of reading comprehension (Brady & Moats, 1997; Moats, 1999; Snow et al., 1998). *SpellRead* instruction develops students' writing skills in tandem with their reading skills. As they work through the Writing Connections portion of each *SpellRead* lesson, students' spelling relies first and foremost upon phonology, with visual memory playing a secondary role. Spelling errors offer *SpellRead* teachers a wealth of formative assessment information about students' phonological skills and guide teachers to know what further instruction, feedback, or practice to provide.

At the conclusion of each daily *SpellRead* session, students write for six minutes in response to a prompt about the text they've read. This provides practice with encoding oral language into written language. During the six minutes, students simply write so that they become comfortable expressing their thoughts in writing as they would orally—without concern for mechanics, spelling, or grammar. Spelling, grammar, and writing conventions are increasingly encouraged and improve as students progress through the program.

For example, Molly is a third-grade student with an above-average verbal IQ. Below is her writing sample from November 18. Her thoughts on the story were disjointed and out of sequence. Even though Molly wrote for the full six minutes, her entry is very brief, indicating that she struggled to get the words on paper.

Only three months later, on February 13, Molly's writing has become more organized and detailed, demonstrating higher levels of comprehension, vocabulary, and spelling.

Molly Oh — I love this, Molly!

the garila ran
away and Annie ran
after it. Jack ran
after bothe of then
and fond them in a
tree. Annie did. evry
thing the garila did
then the garila took
a tree branch and
weht too a difront
tree. wen Annie tried
too she fell then it
started to rane so Jak
went to get the unbreta
but weh he was kuni
bak it got dark and
he cudent fined them.

Over the course of the *SpellRead* program, students build skill in effective written communication, using their growing sound/symbol knowledge to get their thoughts on paper, learning appropriate use of writing conventions, and creating writing portfolios, which demonstrate their growth.

IV. *SpellRead*'s Carefully Designed Instruction

SpellRead students participate in daily, carefully scaffolded small-group lessons for 60 or 90 minutes per day. Each session includes direct instruction and practice in phonemics and phonetics, spelling, active reading and writing, vocabulary acquisition, and comprehension strategies. This comprehensive instructional approach strengthens two integrated sets of essential reading skills: the ability to identify words accurately and confidently based on phonological automaticity and fluency, and the ability to form meaning once the words are recognized, based on vocabulary development and comprehension strategies.

SpellRead's program design is characterized by the following research-validated characteristics of effective reading intervention (see, for example, Blachman et al., 2004; Brady & Moats, 1997; Ehri et al, 2001; Felton, 1993; Foorman, Breier, & Fletcher, 2003; Foorman & Torgesen, 2001; Harm et al., 2003; Moats, 1998; 1999; 2004; National Reading Panel, 2000; Shaywitz & Shaywitz, 2004; Snow et al., 1998; Vellutino et al., 1998):

- Meticulous **_scaffolding_,** including lessons and materials that are predictable, patterned, and sequenced from easy to more difficult, as well as teacher modeling of the thinking processes required by the lessons
- Systematic **_reading and writing_** activities specifically designed to enable students to fully utilize their oral language when reading and writing
- **_Small-group instruction_**, which is more effective in most cases than one-to-one tutoring
- **_Daily instruction over the school year._** _SpellRead_ students typically spend more time in reading and writing activities than students receiving regular classroom instruction
- **_Working and reworking of skills_** in an instructional setting that is supportive both cognitively and emotionally, providing a breadth of activities that allow practice, encouragement, feedback, and positive reinforcement
- **_Ongoing assessment_** that informs instruction
- **_Ongoing expert professional support_** available to _SpellRead_ teachers throughout the year

A.   Meticulously Scaffolded and Sequenced Instruction

Students can become independent, self-regulated, efficient learners through instruction that is deliberately and carefully _scaffolded_. Scaffolds are external instructional supports that are temporary, used during initial learning, and carefully removed as the skills become internalized and automatic. Scaffolds are used to reduce complex sets of skills, breaking them into manageable chunks that are more easily mastered. This allows skills to become internalized and subconscious through use, freeing working memory for new tasks at hand (Bruner, 1990; Collins, Brown, & Newman, 1990; Ellis & Worthington, 1994; Means & Knapp, 1991; Rosenshine, 2002; Vygotsky, 1978).

SpellRead teachers scaffold student learning by reducing and managing variables to which students must pay attention at any one time. Only one new concept, sound, or activity is introduced at a time, and then students work actively with the new element in a variety of ways, including combining it with what they have already learned through prior lessons, so that skills are worked and reworked without boring repetition or "drill and kill" methods. In this way, _SpellRead_ instruction deftly facilitates the gradual release of responsibility from the teacher to the student through carefully designed sequences of activities and lessons. As students master each sound and skill, they move on to the next.

SpellRead's 105 carefully designed sequential lessons are presented in three phases: A, B, and C.
- Phase A—50 lessons designed to introduce the 44 English phonemes and their primary spellings, up to the one-syllable level.
- Phase B—30 lessons designed to introduce the secondary spellings of vowel sounds, consonant blends, and two-syllable words.
- Phase C—25 lessons designed to teach clusters, verb endings, and multisyllable words.

Phase A. Phonemic awareness is built through activities that require phoneme isolation, identification, categorization, blending, segmentation, or deletion. Phase A provides the foundation for the _SpellRead_ program, training the auditory processing function of the brain to hear and manipulate the 44 sounds of English so that students develop a "sound-processing reflex"—automatically and directly recognizing each sound without needing to make intermediate associations with rules, which introduce an extra step, divert attention, and hinder automaticity.

The 44 phonemes are introduced orally and in combination with cards that show the ways in which they are most commonly represented in text. Students learn to clearly and accurately identify each individual sound and to associate the sound with its most common representation in print.

Because learning 200 letters/combinations would be much more arduous than learning the 44 phonemes of English, *SpellRead* differs from reading intervention approaches that rely on a daunting number of rules and/or associations, which can contribute to reliance on compensatory (inefficient) skills and can badly confuse students. Consider, for example, the "long and short vowel sounds" rule. Vowels ("o") are typically taught as having long sounds when they appear in open-syllable words ("go") and short sounds when they appear in closed-syllable words ("hot"). Yet there are many exceptions to that rule ("most")—and words like "to" not only break the long-vowel rule but represent a completely different and new sound ("oo"). Therefore, *SpellRead* makes distinguishing and spelling the 44 sounds (in their most common forms, up to a one syllable level) the central focus of Phase A.

Students are introduced first to the sounds that are easiest to hear and manipulate, gradually progressing to sounds that are more difficult to process and manipulate into consonant-vowel, vowel-consonant, and consonant-vowel-consonant combinations. The eight secondary spellings for five of the primary consonant sounds are also taught in Phase A.

The ability to read lists of unconnected pseudo-words quickly and accurately is a reliable indicator of decoding automaticity at the word level (Brady & Moats, 1997; Compton & Carlisle, 1994; Johnson, 1993; Metsala, 1999a, 1999b; Wolf, Bowers, & Biddle, 2000). *SpellRead* Phase A is taught almost exclusively using pseudo-words—phonetically accurate nonsense words that follow the patterns of English—as the primary vehicles for building accuracy and speed. Through this method, students learn to automatically recognize the sounds and their spellings rather than relying upon visual memory of real words, which would quickly become overwhelmed as students tackle grade-level texts with multiple new words on each page. This ability is empowering for students in that they come to realize that the syllables within very large words are all, in and of themselves, "nonsense words" and that now they can access words that they previously found intimidating.

In Phase A, a lesson typically begins by introducing one new phoneme. The teacher repeats the new sound frequently, using a variety of words or syllables so that students hear the sound, replicate the sound, and distinguish and visualize where they hear the sound by pointing to its position on a "word line" (a card that shows only a blank line with indicators for sound positions on the line).

For example:

Write "m."

TEACHER: Tell me this sound.

If the students do not know this sound, take an Initial-Sound Listening Card and run your finger along the word line, while you say the following.

TEACHER: This is a word line. I will say a word that contains this sound at the beginning. Listen for the sound at the beginning of the word.

Point to the initial position.

TEACHER: moo…moo.

Run your finger along the word line as you say the word.

TEACHER: What sound do you hear at the beginning?

Point to the initial position.

STUDENT: /m/

TEACHER: Yes, this sound is /m/. It is at the beginning, in the initial position. This sound flows. Say it with me: /m/…/m/.

STUDENT: /m/…/m/

Pass [m] to each student.

TEACHER: Point to the sound and say it.

Do this as a round, allowing each student, in turn, to respond orally.

STUDENT: /m/

TEACHER: Yes, it is /m/. This is how you write /m/.

*Write "m." If students have difficulty producing a pure consonant sound—for example, saying /**mu**/ as in "mud," instead of /**m**/—encourage them in the following manner:*

TEACHER: This sound flows.

*Then run your writing hand over your opposite arm saying, and slightly prolonging, the /**m**/ sound. Have the students imitate your hand motion while saying /**m**/, to give them the feeling that the sound is continuous, flowing.*

By the end of Phase A students are able to confidently and automatically read and manipulate all 44 sounds and their secondary consonant spellings. Mastery is demonstrated by reading lists of one-syllable words and pseudo-words with speed and accuracy.

Phase B. Phase B builds on this foundation, teaching secondary spellings, consonant blends, syllabication, and auditory/visual automaticity to the two-syllable level. Phase B also begins the transition back into real language and is taught using a combination of pseudo- and real words. Students are introduced to consonant blends and secondary vowel spellings while working toward automaticity with two- and three-syllable words.

Phase C. Phase C continues the development of fluency with polysyllabic words and introduces the most common clusters (morphemes, such as *-tion* in invention or *-ed* and *-ing* endings of verbs) as well as pronunciation and spelling of verb forms. Phase C is intensely language oriented and taught almost exclusively with real words, to which students bring and apply their cumulative word-level knowledge from Phases A and B. Pseudo-words are used only to develop automaticity with verb endings.

Success at each lesson and phase of the *SpellRead* program is dependent on mastery of the preceding lessons and levels. As students' word-level skills, fluency, automaticity, vocabulary, and comprehension develop, the emphasis, content, pacing, and complexity of reading instruction modulates over time. As word-reading efficiency is gained, the need for active decoding decreases (because it has become automatic) and the contribution of background knowledge, vocabulary, and broader language skills increases. Following one year of intensive *SpellRead* intervention, students have the word-level skills, automaticity, and confidence to be able to participate in regular classroom instruction and to build further vocabulary and content-area knowledge.

Materials and Activities. Each *SpellRead* phase includes carefully designed materials that are clear, concise, consistent, and sequenced from easy to more difficult, focusing on one new concept at a time while building upon and reinforcing previous concepts. One of *SpellRead*'s principal techniques is to minimize auditory and visual distractions, enabling students to focus solely on sounds and language. As a result, the materials and activities are all highly specific and free of unnecessary elements.

For example:
- Teacher's Guides provide overviews, objectives, materials lists, and pacing with lessons that follow a consistent pattern so that teachers and students can focus their attention on the skill targeted by the lesson.
- Student Activity Books provide controlled, sequenced, targeted practice with sounds and spellings and opportunities to work and rework previously learned skills.
- Answer Keys allow students to own their progress through self-checking and self-monitoring.
- Card Packs are used by students at every level to provide tactile, sensory reinforcement that promotes sound-letter associations and develops fluency.
- Trade Books engage students at their appropriate levels with motivating, readable, and varied text.

Using these materials, *SpellRead* students practice sounds by listening, building, analyzing, blending, synthesizing, spelling, visualizing, pronouncing vocabulary, practicing syllabication, reviewing, and mastering Card Packs.

In *SpellRead* activities, students are encouraged to point to each sound as they read it. This technique strengthens the auditory process by bringing focus and attention to the individual sounds and the order in which they are heard. Students use the index finger of their writing hand to point directly beneath each sound as they read it, then sweeping, or blending, sounds together to read syllables or words in their entirety. The sweep starts and ends where the sound starts and ends.

B. Daily Small-Group Instruction over the School Year

SpellRead students are placed in small homogenous groups of no more than five students with one teacher and these groups remain stable over the course of the school year. Grouping students in this way allows the instructor to attend to individual needs, monitor student learning, and provide positive reinforcement of success, which develops student confidence and encourages a high degree of student participation. Students receiving *SpellRead* intervention instruction usually spend more time in reading and writing activities than students receiving regular classroom instruction.

SpellRead may be taught by general or special education teachers, reading specialists, psychologists, speech-language pathologists, or paraprofessionals. *SpellRead* instructors demonstrate strong phonological abilities themselves and participate in 42 hours of live training (as well as a small amount of online training) in how to implement the program, with ongoing expert support available to them throughout the year.

At the end of the year as they exit *SpellRead*, most students are able to read multisyllabic words typically presented in grade-level texts, have expanded their vocabulary, are able to comprehend content-area information, and are participating academically in the regular classroom curriculum. Most will continue to need scaffolding and support to build further vocabulary and content-domain knowledge to grade-level expectations through a program like **PCI TextConnections**.

C. Working and Reworking Skills in a Supportive Instructional Setting

SpellRead students have substantial opportunity to develop and practice skills in an instructional setting that is both cognitively and emotionally supportive and provides encouragement, feedback, and positive reinforcement. Regular review is embedded throughout the lessons, reinforcing mastery of the known while adding one new element at a time. Because students work individually with answer keys, they receive extensive personalized feedback and have recurring opportunities to correct errors and strengthen skills.

D. Ongoing Assessment and Professional Support

Regular formative assessment data about student progress, which can be used to inform instruction, is available to *SpellRead* instructors daily through *SpellRead*'s online Instructor Support System (ISS). The ISS is an easy-to-use tracking system that gathers, manages, and reports student information in a user-friendly format. The ISS reports weekly progress on critical skills and enables *SpellRead* instructors to customize instruction through the early identification of individual student needs. The ISS updates each student's profile with each administration of formative or standardized assessments and outlines students' strengths and weaknesses. The weekly report tracks class information, student attendance, lessons reached, review completed, books read, reading fluency rate, total hours of student participation, and any behavior issues.

If a student is identified as making inadequate progress, an individualized remediation plan is developed for that student. The individual student and group-summary data can be rolled up into school-wide and district-wide reporting as required, tracking the performance of all students and subgroups of students within a school, district, or state on both standardized testing and program-specific requirements, with reports tailored to fit specific criteria. In addition, the ISS can generate award certificates for students, outlining the student's specific accomplishments.

Expert support coaches, readily available to *SpellRead* instructors via telephone and email, help instructors to analyze the ISS data and to adjust their instruction accordingly.

E. Evidence of *SpellRead*'s Effectiveness

Results from several clinical trials, taken together, provide robust evidence that the *SpellRead* program is effective in helping students with a variety of risk factors to become fluent, accomplished readers. *SpellRead* instruction significantly improves the phonemic, phonics, accuracy, comprehension, and spelling skills of struggling readers of all ages across diverse populations. The foundation of phonological automaticity laid through *SpellRead* enables effortless word identification, allowing readers to focus on vocabulary development and making meaning from text. This was demonstrated by the fact that students who participated in *SpellRead* treatment groups continued to grow in comprehension skills after *SpellRead* instruction had ended (Cornwall, 1998; Rashotte, 2001; Rashotte et al., 2001; MacDonald & Cornwall, 1995; Torgesen et al., 2003; Torgesen et al., 2006; Wahl, 2003).

F. Essential Conditions for Success

In order to ensure effective implementation of the *SpellRead* program, sufficient time, fidelity to the instructional design, regular monitoring of student progress, and adequate teacher training and support must be present.

Sufficient Intervention Time. It is vital that the full program of *SpellRead* instruction be implemented on a regular basis. The intensive, systematic, and focused instruction required by the full *SpellRead* design must be provided consistently, and for a sufficient duration, so that all students move through all phases of the program.

Fidelity to the Instructional Design. *SpellRead* groups should contain no more than five students, grouped according to word-level reading ability as discerned through diagnostic test results. Sessions should be conducted in a quiet space free from distractions, and each *SpellRead* session should include all three components: Linguistic Foundations, Active Reading, and Writing Connections.

Regular Monitoring of Student Progress. *SpellRead* instructors enter specific formative assessment data into the ISS each week, ensuring that students are mastering the intended sequence of skills. These data are used to guide ongoing instruction.

Sufficient Teacher Training and Support. *SpellRead* instructors possess strong, efficient auditory-processing, phonological, reading, and writing skills. Training, materials, and support should ensure that every teacher understands the *SpellRead* methodology and rationale and is equipped to deliver the highest quality of instruction to students. Building-level knowledge of the program by, and support from, principals, classroom teachers, parents, and support staff are also necessary to guarantee the program's success.

Glossary of Terms

Automaticity: The state in which accurate processing of information can occur while conscious attention is directed elsewhere.

Grapheme: A print symbol (alphabet letter or combination of letters) that systematically represents component sound of a language.

Lexicon: One's mental store of vocabulary terms, meanings, and pronunciations.

Morpheme: The smallest meaningful linguistic unit in the grammar of a language.

Morphology: The study of the structure and form of words in a language, including inflection, derivation, and the formation of compounds.

Orthography: Spelling; the method of representing spoken language by letters/graphemes.

Phoneme: A unit of sound that makes a difference to meaning and is represented by a letter or letters of an alphabet.

Phonemic Awareness: The insight that every spoken word can be conceived as a sequence of phonemes. Key to understanding the logic of the alphabetic principle and thus to learning phonics and spelling.

Phonology: The sound structure of speech and, in particular, the perception, representation, and production of speech sounds, including words, syllables, and phonemes.

Pragmatics: The ways in which members of a speech community bridge the gap between sentence meaning and a speaker's meaning.

Semantics: The ways in which language conveys meaning.

Syntax: The rules and patterns by which words or other elements of sentence structure are combined to form grammatical sentences.

References

Alliance for Excellent Education. (2006b). *Policy brief: Why the crisis in adolescent literacy demands a national response.* Retrieved February 21, 2007, from http://www.all4ed.org/publications/ StrivingBrief3_numbers_02.pdf

Archer, A.L., Gleason, M.M., & Vachon, V.L. (2003). Decoding and fluency: Foundation skills for struggling older readers. *Learning Disability Quarterly, 26*(2), 89–101.

Barton, P. E. (2005). *One-third of a nation: Rising dropout rates and declining opportunities.* Princeton, NJ: Educational Testing Service.

Bashir, A.S., & Scavuzzo, A. (1992). Children with language disorders: Natural history and academic success. *Journal of Learning Disabilities, 25*(1), 53-65.

Biemiller, A. (2003). Oral comprehension sets the ceiling on reading comprehension. *American Educator, 27*(1), 23, 44.

Blachman, B. A. (2000). Phonological awareness. In M. L. Kamil, P. B. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. 3, pp. 483-502). Mahwah, NJ: Lawrence Erlbaum Associates.

Blachman, B.A., Schatschneider, C., Fletcher, J.M., Francis, D.J., Clonan, S.M., Shaywitz, B.A., et al. (2004). Effects of intensive reading remediation for second and third graders and a 1-year follow-up. *Journal of Educational Psychology, 96*(3), 444–461.

Boroditsky, L. (2001). Does language shape thought? Mandarin and English speakers' conceptions of time. *Cognitive Psychology, 43*, 1–22. Retrieved from http://www-psych.stanford.edu/~lera/papers/ mandarin.pdf

Bowerman, M., & Levinson, S.C. (Eds.). (2001). *Language acquisition and conceptual development.* New York: Cambridge University Press.

Brady, S., & Moats, L. (1997). *Informed instruction for reading success: Foundations for teacher preparation.* Baltimore: The International Dyslexia Association.

Bruner, J. (1990). *Acts of meaning.* Cambridge, MA: Harvard University Press.

Chall, J. S. (1983). *Stages of reading development.* New York: McGraw-Hill.

Chall, J. S., & Jacobs, V. A. (2003). The classic study of poor children's fourth-grade slump. *American Educator, 27*(1), 14–15.

Chen, R.S., & Vellutino, F.S. (1997). Prediction of reading ability: A cross-validation study of the simple view of reading. *Journal of Literacy Research, 29*(1), 1-24.

Collins, A., Brown, J.S., & Newman, S.E. (1990). Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. In L. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser.* Hillsdale, NJ: Erlbaum.

Compton, D.L., & Carlisle, J.F. (1994). Speed of word recognition as a distinguishing characteristic of reading disabilities. *Educational Psychology Review, 6*(2), 115–140.

Cornwall, A. (1998). *SpellRead Canada test results.* Halifax, Nova Scotia: Unpublished report, Isaac Walton Killam Hospital.

Daggett, W. (2003). *Achieving reading proficiency for all.* Retrieved March 12, 2007, from http://www. leadered.com/pdf/Reading%20White%20Paper.pdf

Eden, G.F., Jones, K.M., Cappell, K., Gareau, L., Wood, F.B., Zeffiro, T.A., et al. (2004). Neural changes following remediation in adult developmental dyslexia. *Neuron, 44*(3), 411–422.

Ehri, L.C. (1995). Phases of development in learning to read words by sight. *Journal of Research in Reading, 18*(2), 116–125.

Ehri, L.C. (1998). Grapheme-phoneme knowledge is essential for learning to read words in English. In J.L. Metsala & L.C. Ehri (Eds.), *Word recognition in beginning literacy* (pp. 3–40). Mahwah, NJ: Erlbaum.

Ehri, L.C., Nunes, S.R., Willows, D.M., Schuster, B. V., Yaghoub-Zadeh, Z., & Shanahan, T. (2001). Phonemic awareness instruction helps children learn to read: Evidence from the National Reading Panel's meta-analysis. *Reading Research Quarterly, 36*(3), 250–287.

Ellis, E.S., & Worthington, L.A. (1994). *Effective Teaching Principles and the Design of Quality Tools for Educators.* Unpublished paper commissioned by the Center for Advancing the Quality of Technology, Media, and Materials, University of Oregon.

Felton, R. H. (1993). Effects of instruction on the decoding skills of children with phonological processing problems. *Journal of Learning Disabilities, 26*(9), 583–589.

Foorman, B. R., Breier, J.I., & Fletcher, J.M. (2003). Interventions aimed at improving reading success: An evidence-based approach. *Developmental Neuropsychology, 24*(2–3), 613–639.

Foorman, B.R., & Torgesen, J. (2001). Critical elements of classroom and small-group instruction promote reading success in all children. *Learning Disabilities Research & Practice, 16*(4), 203–212.

Fuchs, L.S., Fuchs, D., Hosp, M.K., & Jenkins, J.R. (2001). Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis. *Scientific Studies of Reading, 5*(3), 239–256.

Gauthier, M. (2002). *Assessing the complexity of literacy tasks: A guide to analysis with examples and exercises.* Presentation made to the Plain Language Association International Conference, Toronto, Canada.

Goswami, U. (2001). Early phonological development and the acquisition of literacy. In S.B. Neuman & D.K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 111–125). New York: Guilford.

Greene, J.P. (2002). *High school graduation rates in the United States.* Manhattan Institute for Policy Research. Retrieved March 13, 2007, from http://www.manhattan-institute.org/html/cr_baeo.htm

Harm, M.W., McCandliss, B.D., & Seidenberg, M.S. (2003). Modeling the successes and failures of interventions for disabled readers. *Scientific Studies of Reading, 7*(2), 155–182.

Hart, B., & Risley, T.R. (2003). The early catastrophe. *Education Review, 17*(1), 110–118.

Hook, P.E., & Jones, S.D. (2002). The importance of automaticity and fluency for efficient reading comprehension. *Perspectives, 28*(1), 9–14.

Hirsch, E.D. (2003). Reading comprehension requires knowledge—of words and the world: Scientific insights into the fourth-grade slump and the nation's stagnant comprehension scores. *American Educator, 27*(1), 10–13.

Johnson, D.J. (1993). Relationships between oral and written language. *School Psychology Review, 22*(4), 595–609.

Kavale, K.A. (1988). The long-term consequences of learning disabilities. In M.C. Wang, H.J. Walberg, & M.C. Reynolds (Eds.), *The handbook of special education: Research and practice* (pp. 303–344). New York: Pergamon.

LaBerge, D., & Samuels, S.J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology, 6*, 293–323.

Lehr, F., Osborn, J., & Hiebert, E. (2004). *A focus on vocabulary*. Honolulu, HI: Pacific Resources for Education and Learning.

Liberman, A.M. (1999). The reading researcher and the reading teacher need the right theory of speech. *Scientific Studies of Reading, 3*(2), 95–111.

Liberman, I.Y., & Shankweiler, D. (1986). Phonology and the problems of learning to read and write. *Remedial and Special Education, 6,* 8–17.

Lyon, G. R. (1998). Why reading is not a natural process. *Educational Leadership, 55*(6), 14–18.

Lyon, G.R., & Chhabra, V. (2004). The science of reading research. *Educational Leadership, 61*(6), 12–17.

Lyon, G.R., Shaywitz, S.E., & Shaywitz, B.A. (2003). A definition of dyslexia. *Annals of Dyslexia, 53*, 1–14.

MacDonald, G.W., & Cornwall, A. (1995). The relationship of phonological awareness and reading and spelling achievement eleven years later. *Journal of Learning Disabilities, 28*(8), 523–527.

Means, B., & Knapp, M.S. (1991). Cognitive approaches to teaching advanced skills to educationally disadvantaged students. *Phi Delta Kappan, 73*(4), 282–289.

Metsala, J.L. (1999a). The development of phonemic awareness in reading-disabled children. *Applied Psycholinguistics, 20*(1), 149–158.

Metsala, J.L. (1999b). Young children's phonological awareness and nonword repetition as a function of vocabulary. *Journal of Educational Psychology, 91*(1), 3–19.

Metsala, J.L., & Walley, A.C. (1998). Spoken vocabulary growth and segmental restructuring of lexical representations: Precursors to phonemic awareness and early reading ability. In J.L. Metsala & L.C. Ehri (Eds.), *Word recognition in beginning literacy* (pp. 89–120). Mahwah, NJ: Erlbaum.

Moats, L.C. (1998). Teaching decoding. *American Educator,* Spring/Summer, 1–9.

Moats, L.C. (1999). *Teaching reading* is *rocket science: What expert teachers of reading should know and be able to do.* Washington, DC: American Federation of Teachers.

Moats, L.C. (2004). Relevance of neuroscience to effective education for students with reading and other learning disabilities. *Journal of Child Neurology, 19*(10), 840–845.

Nation, K., & Snowling, M.J. (2004). Beyond phonological skills: Broader language skills contribute to the development of reading. *Journal of Research in Reading, 27*(4), 342–356.

National Center for Education Statistics. (2005). *Fourth-grade students reading aloud: NAEP 2002 Special Study of Oral Reading.* Washington, DC: U.S. Department of Education Institute for Education Sciences.

National Center for Education Statistics. (2006). *The nation's report card: Reading 2005*. Washington, DC: U.S. Department of Education Institute for Education Sciences.

National Center for Education Statistics (2007a). *National assessment of adult literacy (NAAL): Key findings.* Washington, DC: U.S. Department of Education Institute for Education Sciences. Retrieved March 12, 2007, from http://nces.ed.gov/NAAL/index.asp?file=KeyFindings/Demographics/Overall. asp&PageId=16

National Center for Education Statistics. (2007b). *The nation's report card: 12th-grade reading and mathematics 2005*. Washington, DC: U.S. Department of Education Institute for Education Sciences.

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. Reports of the subgroups*. Washington, DC.

Organization for Economic Cooperation and Development. (1997). *Literacy skills for the knowledge society: Further results from the International Adult Literacy Survey.* Paris.

Pikulski, J.J., & Chard, D.J. (2005). Fluency: Bridge between decoding and reading comprehension. *The Reading Teacher, 58*(6), 510–519.

Ramus, F. (2003). Developmental dyslexia: Specific phonological deficit or general sensorimotor dysfunction? *Current Opinion in Neurobiology, 13*(2), 212–218.

Rashotte, C.A. (2001). *The effectiveness of a phonologically based reading program on the reading skills of incarcerated youths at the Newfoundland and Labrador Youth Centre at Whitbourne*. Tallahassee, FL: Unpublished report, Florida State University.

Rashotte, C.A., MacPhee, K., & Torgeson, J.K. (2001). The effectiveness of a group reading instruction program with poor readers in multiple grades. *Learning Disability Quarterly, 24*(2), 119-134.

Rosenshine, B.V. (2002). Converging findings on classroom instruction. In A. Molnar (Ed.), *School Reform Proposals: The Research Evidence*. Information Age Publishing. Retrieved March 22, 2007 [electronic version]

Scanlon, D.M., Vellutino, F.R., Small, S.G., Fenuele, D.P., & Sweeney, J.M. (2005). Severe reading difficulties—can they be prevented? A comparison of prevention and intervention approaches. *Exceptionality, 13*(4), 209–227.

Shaywitz, S.E. (2003). *Overcoming dyslexia: A new and complete science-based program for reading problems at any level.* New York: Alfred P. Knopf.

Shaywitz, S.E., & Shaywitz, B.A. (2004). Reading disability and the brain. *Educational Leadership, 61*(6), 6–11.

Smith, M. C., Mikulecky, L., Kibby, M. W., Dreher, M. J., & Dole, J. A. (2000). What will be the demands of literacy in the workplace in the next millennium? *Reading Research Quarterly, 35,* 378-383.

Snow, C.E., Burns, M.S., & Griffin, P. (Eds.) (1998). *Preventing reading difficulties in young children.* Washington, DC: National Academy Press. [electronic version]

Stahl, S.A. (2003). How words are learned incrementally over multiple exposures. *American Educator, 27*(1), 18–19, 44.

Stanovich, K.E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21,* 360–407.

Sum, A., Harrington, P., Bartishevich, C., Fogg, N., Khatiwada, I., Motroni, J., et al. (2003). *The hidden crisis in the high school dropout problems of young adults in the U.S.: Recent trends in overall school dropout rates and gender differences in dropout behavior.* Paper prepared for the Business Roundtable, Washington, DC, February 2003.

Swanson, C.B., & Chaplin, D. (2003). *Counting high school graduates when graduates count: Measuring graduation rates under the high stakes of NCLB.* Washington, DC: Urban Institute.

Tallal, P. (2000). The science of literacy: From the laboratory to the classroom. *Proceedings of the National Academy of Sciences, 97*(6), 2402–2404.

Torgesen, J. K. (1997). The prevention and remediation of reading disabilities: Evaluating what we know from research. *Journal of Academic Language Therapy, 1*, 11-47.

Torgesen, J.K. (2002a). The prevention of reading difficulties. *Journal of School Psychology, 40*(1), 7–26.

Torgesen, J. K. (2002b). Lessons learned from intervention research in reading: A way to go before we rest. In R. Stainthorpe (Ed.), *Literacy: Learning and teaching*. London: British Psychological Association.

Torgesen, J.K., & Mathes, P.G. (1998). *What every teacher should know about phonological awareness*. Tallahassee, FL: Florida Department of Education.

Torgesen, J., Rashotte, C., Alexander, A., Alexander, J., & McPhee, K. (2003). Progress toward understanding the instructional conditions necessary for remediating reading difficulties in older children. In B. Foorman (Ed.), *Preventing and Remediating Reading Difficulties: Bringing Science to scale* (pp. 275-297). Timonium, MD: York Press, Inc.

Torgesen, J., Stancavage, F., Myers, D., Schirm, A., Stuart, E., Vartivarian, S., et al. (2006). *Closing the reading gap: First year findings from a randomized trial of four reading interventions for striving readers*. Washington, DC: Corporation for the Advancement of Policy Evaluation.

Vellutino, F.R., & Scanlon, D. M. (1998). *Research in the study of reading disability: What have we learned in the past four decades?* Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.

Vellutino, F.R., Scanlon, D.M., & Lyon, G.R. (2000). Differentiating between difficult-to-remediate and readily remediated poor readers: More evidence against the IQ-achievement discrepancy definition of reading disability. *Journal of Learning Disabilities, 33*(3), 223–238.

Vellutino, F. R, Scanlon, D. M., Sipay, E., Small, S., Pratt, A., Chen, R., et al. (1996). Cognitive profiles of difficult-to-remediate and readily remediated poor readers: Early intervention as a vehicle for distinguishing between cognitive and experiential deficits as basic causes of specific reading disability. *Journal of Educational Psychology, 88*(4), 601–638.

Velutino, F.R., Scanlon, D.M., & Spearing, D. (1995). Semantic and phonological coding in poor and normal readers. *Journal of Experimental Child Psychology, 59*(1), 76-123.

Vellutino, F.R., Scanlon, D.M., & Tanzman, M.S. (1998). The case for early intervention in diagnosing specific reading disability. *Journal of School Psychology, 36*(4), 367–397.

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Wahl, M. (2003). *Report on SpellRead*. Tallahassee, FL: Florida Center for Reading Research.

Walczyk, J.J., & Griffith-Ross, D.A. (2007). How important is reading skill fluency for comprehension? *The Reading Teacher, 60*(6), 560–569.

Walczyk, J.J., Marsiglia, C.S., Johns, A.K., Bryan, K.S. (2004). Children's compensations for poorly automated reading skills. *Discourse Processes—A Multidisciplinary Journal, 37*(1), 47–66.

Walley, A.C., Metsala, J.L., & Garlock, V.M. (2003). Spoken vocabulary growth: Its role in the development of phoneme awareness and early reading ability. *Reading and Writing: An Interdisciplinary Journal, 16*(1-2), 5–20.

Winskel, H. (2006). The effects of an early history of otitis media on children's language and literacy skill development. *British Journal of Educational Psychology, 76*, 727–744.

Wolf, M., Bowers, P.G., Biddle, K. (2000). Naming-speed processes, timing, and reading: A conceptual review. *Journal of Learning Disabilities, 33*(4), 387–407.