

RESEARCH

Research-Based Reading

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Introduction

In recent years, research in the field of literacy education has provided a clearer vision about important issues in the development of reading abilities. Three themes have gained widespread acceptance. First, reading is a strategic process. Fluent readers employ a variety of strategies to understand text (Juel & Minden-Cupp, 2000) and teachers should provide young students with instruction and practice in using those strategies. Second, reading instruction should be differentiated (Spiro, 2001). That is, all readers approach text in ways that vary according to their own abilities, purposes, and reading situations. Teachers should provide instruction that is varied and that results in students' ability to flexibly switch between different approaches when dealing with text. Third, the reader's ultimate goal is meaning construction, or the comprehension of text in light of prior knowledge and purpose. Teachers should continually focus students' attention on deriving appropriate understandings from text content.

The SPIRE® curriculum addresses all three themes. Strategies for successful reading are introduced through direct teacher-led instruction and practiced by students in monitored reading situations. Lessons in SPIRE draw students back to the core of what reading is all about, employing newly learned strategies in real reading situations in order to comprehend text.

Three Themes

1. Reading is a strategic process.
2. Reading instruction should be differentiated.
3. The reader's ultimate goal is meaning construction, or the comprehension of text in light of prior knowledge and purpose.



Research-Based Principles of Literacy Development—Best Practices

The search for the one best way to teach reading has been an active pursuit of educational researchers for more than fifty years. In the mid-1960s, the United States Office of Education (USOE) carried out the comprehensive and influential First Grade Studies, the results of which were first published in 1967 and then—because of their importance to the history of the field—republished in 1997 (Bond & Dykstra, 1997). A wide variety of approaches to teaching early reading were evaluated. One major finding was that early reading curricula that incorporated a structured approach to teaching phonics and word recognition were superior to those that did not.

In the ensuing years, researchers in the field of reading and literacy have repeatedly addressed this issue of identifying the best way to teach reading. Their findings have sometimes been obscured by curricular fads that swept through schools, by individual teachers or researchers who enthusiastically popularize certain approaches, and by research reviewers who have highlighted highly subjective, personalized reports in their compilations of research results.

Three key principles of instruction stand out in this strand of research

Reading lessons should be

- explicitly taught by the teacher;
- systematically planned and organized; and
- sequenced in a way that moves from simple to complex.

In the confusion, a particular strand of research has consistently pointed to the same major principles of literacy development, results that confirm the findings of the early USOE First Grade Studies and go beyond them. This strand has followed scientific principles of research, basing conclusions on studies that objectively compare various teaching approaches and that subject the results to rigorous statistical interpretations.

The first major study in this strand was carried out by the late Jeanne Chall, the noted Harvard University researcher who popularized the phrase “the great debate”—meaning the ongoing divisive arguments about finding the best method to teach reading—in her book *Learning to Read: The Great Debate* (1967/1996). Her book was based on the increasingly extensive body of research literature in existence up to that time, and she concluded that systematic phonics instruction is important (p. 307).

Some years later, Marilyn Jager Adams, with the sponsorship of the Center for

the Study of Reading at the University of Illinois, undertook the task of updating Chall's efforts in *Beginning to Read: Thinking and Learning about Print* (1990). In the intervening years between Chall's work and Adams's, the field of reading had changed dramatically under the influence of cognitive psychological research and by holistic approaches to reading instruction known as whole language. Despite the changes, however, Adams's research survey reached much the same conclusions as had Chall's (p. 117).

The United States federal government made efforts to bring some closure to this debate over reading methodology, resulting in two large-scale committee reports on the state of the research. The first report was carried out by the Committee on the Prevention of Reading Difficulties in Young Children (Snow, Burns, & Griffin, 2000), a group appointed by the National Academy of Sciences at the request of the U.S. Department of Education and the U.S. Department of Health and Human Services. Their work involved examining hundreds of research studies in order to address a variety of issues related to early reading development. Once again, their conclusions supported the principles of earlier research reviews. The National Reading Panel (2000) carried out what has been the most extensive of all the research reviews. This panel was established by the U.S. National Institute of Child Health and Human Development (NICHD).



Studies have continued to support the systematic teaching of literacy. Morris, Bloodgood, Lomax, and Perney's (2003) longitudinal study of reading concludes, "What is needed is careful, systematic teaching, along with adequate review of the concepts taught" (p. 322). Leppanen, Niemi, Aunola, and Nurmi (2004) found that systematic instruction is particularly helpful for children who are low performing. The National Institute of Child Health and Human Development's extensive Study of Early Child Care and Youth Development (SECCYD) found that first-grade classrooms that were higher in instructional support yielded higher reading scores (NICHD Early Childhood Care Research Network, 2004).

Recently, organizations such as the International Dyslexia Association have stressed the importance of explicit, systematic teaching that focuses on phonological awareness, word recognition, phonics and decoding, spelling, and syntax at the sentence and paragraph levels. (Cowen, 2016). In 2019, the International Literacy Association (previously known as the International Reading Association) issued a leadership brief supporting the call for explicit, systematic phonics instruction and describing the seven key characteristics of effective phonics instruction: readiness skills, scope and sequence, blending, dictation, word awareness, high-frequency words, and reading connected text (Blevins, 2019).

SPIRE addresses the principles of best practices as set forth by the research described above. SPIRE lesson plans and materials provide engaging tools designed to systematically and successfully teach literacy. SPIRE lessons are flexible in nature, allowing for differentiated instruction while still providing the depth of learning necessary for struggling readers to succeed in learning to read.

SPIRE guides students to skilled mastery in:

- Phonological awareness
- Phonics
- Fluency
- Vocabulary
- Comprehension

SPIRE provides a sequenced lesson plan structure that gradually moves students through a developmental process from emergent levels of literacy to early reading to accomplished, fluent reading. An actively involved teacher works with students throughout each lesson, utilizing multisensory instruction, game-like activities, and engaging stories that enhance student attention. Each SPIRE lesson is designed to facilitate the process of moving children from a particular concept important to early reading to the foundations of a lifelong love of, and commitment to, literacy.

Most importantly, SPIRE successfully guides students to skilled mastery in phonological awareness, phonics, fluency, vocabulary, and comprehension, the five major foci of the National Reading Panel's report.

Phonological Awareness

In their book, *Struggling Readers: Assessment and Instruction in Grades K–6* (2003), Balajthy and Lipa-Wade define phonological awareness:

“Phonological awareness is a general term referring to an awareness (i.e., an ability to focus on and manipulate) the sounds of words and their components. ... Phonological awareness includes phonemic awareness [the specific ability to manipulate individual phonemes, minimal sound units such as the /v/ in vat or the /f/ in fat], as well as such aspects of language as onsets (the initial letter sound[s] in a word, such as /b/ in book or /spl/ in splash), the sounds of syllables, and rhymes” (p. 33).

Research over the past thirty years has indicated that phonological awareness is central to the success of the reading process. O’Connor’s (2011) survey of phonological awareness research found a strong relationship between those abilities and overall reading ability. McCulley, Katz, and Vaughn (2013) suggest that phonological awareness tasks have been shown to have the highest correlation of any factors with early reading achievement. Snow, Burns, and Griffin’s (1998) comprehensive survey of the research on this topic indicated that phonological awareness was a strong predictor of future reading achievement, with a correlation of .46 (p. 112). The National Reading Panel (2000) concurred, suggesting that it is one of the two best predictors (along with letter identification) of how well kindergartners learn to read (Section 2, p. 11).

Research over the past thirty years has indicated that phonological awareness is central to the success of the reading process.

The National Reading Panel’s survey concluded that instruction in phonological awareness was effective in improving that skill. Instruction also improved both general reading and spelling (Section 2, pp. 3, 31–32). The study also concluded that, while some phonological development will occur naturally, explicit instruction leads to maximum development (Section 2, p. 33). A major finding pointed to the wide range of types of students with whom phonological awareness instruction was found to be effective. They included students at both lower and middle socioeconomic status levels, preschoolers, kindergartners, first graders, average and struggling readers, and English language learners (Section 2, p. 5). Suggate’s (2016) more recent meta-analysis of phonological awareness intervention effectiveness also supports its effectiveness, especially with students reading at the preschool or kindergarten levels.

The National Reading Conference’s “White Paper on Effective Beginning Reading Instruction” (Pressley, 2002) concurred in its survey of the research: phonological awareness is best learned when it is mingled with letter identification and decoding instruction (p. 180), as occurs in SPIRE lessons. The National Reading Panel (2000, pp. 2–4) found that teaching phonemic awareness with the actual printed letters, another characteristic of SPIRE lessons, was more effective than trying to teach it without print.

Oudeans (2003) investigated the advantages of integrated instruction in phonological awareness with kindergartners exhibiting low phonological awareness abilities. The experimental group integrated letter identification, decoding, blending, and segmenting during class periods. A control group was taught using a nonintegrated approach in which skills were taught separately. The integrated group, receiving instruction similar to SPIRE lessons, showed higher achievement.

Just as researchers have identified writing as a key ingredient in the teaching of letter identification, so have they found that writing has a facilitating effect on the learning of phonological awareness (Morris, Bloodgood, Lomax, & Perney, 2003).

The importance of children's writing in developing phonological awareness was also highlighted in Craig's 2003 work. This study, selected by the International Reading Association for its 2003 Outstanding Dissertation Award, had teachers use writing with "explicit explanations, demonstrations, and practice of phonological awareness and alphabetic skills" (p. 440). The instruction led to improvement in phonological awareness, as well as in word recognition and comprehension.

Nichols, Rupley, Rickelman, and Algozzine's (2004) research has raised concerns about the phonological development of specific groups of children. They found that Hispanic children and children of lower socioeconomic status were more likely than others to fail to achieve an adequate understanding of phonology during their kindergarten years (p. 77) without use of supplemental curricula such as SPIRE



Phonological Awareness in SPIRE

The SPIRE program provides integrated, explicit instruction in phonological awareness. In fact, in each SPIRE lesson, students are led to use newly learned phonological awareness concepts in higher-level decoding and fluency tasks. Phonological awareness learning is consistently integrated with letter identification and phonics for better efficiency of learning.

Pre-Level 1 SPIRE Foundations: Sound Sensible®

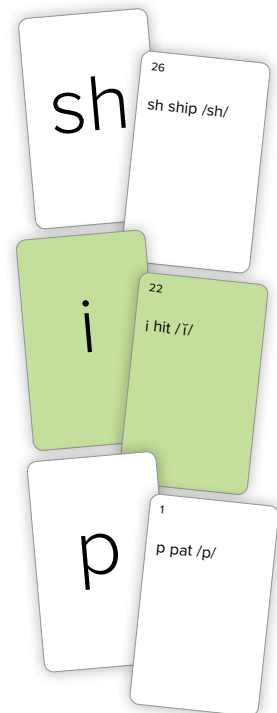
Lessons begin with Step 1, a Listening Activity. Step 1 is followed by Step 2: Rhyming, developed in a hierarchy of increasingly complex skills. First, students are introduced to blending onsets and rimes using a hand motion, which helps make a concrete process of a conceptual abstraction. In later weeks, they move on to more sophisticated rhyming tasks: matching rhyming words; categorizing rhymes; using rhymes with segmentation and blending; and finally generating their own rhymes. Step 3: Segmentation begins with segmenting sentences into their component words, then compound words into their roots, multisyllabic words into their syllables, and finally words into their component phonemes. Students also carry out phonological manipulations with individual phonemes.

The daily Phoneme-Grapheme Activity in SPIRE Foundations: Sounds Sensible, during Step 4, has to do with the development of students' understanding of phoneme-grapheme relationships. Students learn the letter name (that is, letter identification) and its sound, and they learn to print its lowercase form. They engage in a variety of games to review and reinforce learning. The study of phoneme-grapheme relationships that occurs in this step of the SPIRE Foundations: Sounds Sensible daily lesson plan is an early phonics task, and one that also develops phonological awareness.

SPIRE Levels 1–6

This program starts with the use of Phonogram Cards, the first step in the 10-step lesson. Students review previously taught Phonogram Cards. In Introductory Lessons, the teacher then introduces a new concept. At an early level, a concept may present individual letter identification tasks, such as short a. In a Level 6 lesson, the most advanced level of SPIRE, the new concept might be the /oy/ sound produced by the letter combination oi, a diphthong.

A suggested script is provided, in which the teacher gives instructions to the students to say the name of the letter and the letter sound when the card is shown. The teacher uses the print Phonogram Cards and Key Words at this stage of learning to introduce the printed letters and their sounds with a printed key word and its illustration to help students remember the letter and sound. The letter identification skill taught in an Introductory Lesson is reinforced both later in that same lesson (for example, in Step 4: Decoding and Sentence Reading) and in later lessons. Students are learning the phonological concepts involved in identifying individual letter sounds while simultaneously learning the more advanced phonics concepts of identifying the printed letter commonly associated with that sound.



Step 2 of each lesson deals directly with phonological awareness. At an early level, the teacher might ask, "Close your eyes. I will say a word. Repeat the word, and if you hear the /ă/ sound, raise your hand. ... The first word is *hat*." At another level, student attention turns to the Phoneme Segmentation Sheet in their workbooks as well as to their Manipulatives Kit. In one lesson, students are told to use dots to represent the sounds in words provided by the teacher (a phoneme segmentation task). The teacher might say, *road*, and the students would first identify the number of phonemes in the word (three), then sequentially drag white (for consonants) and green (for vowels) circles to the bottom of the sheet to represent the word (white-green-white).

Other steps may help develop phonological awareness as well. In early lessons, Step 3 may involve a sound counting activity, integrated with attention to phonics development. Students might practice their phonological segmentation skills with the word *bat* by counting the sounds on their raised fingers, prior to moving to a letter tile phonics activity. Step 8 (Prespelling) may involve both phonological and phoneme-grapheme analysis of a concept-related word: "Say *hat*. What is the first sound you hear in *hat*? How many sounds do you hear in *hat*?"



Phonics

The importance of phonics instruction is recognized by major organizations in the field of reading education (International Dyslexia Association, 2009; International Literacy Association, 2019) and by the National Institute of Child Health and Human Development (Lyon, 1998).

The National Reading Panel (NRP) report (2000, Section 2, p. 91) used a rigorous rating system to identify the research studies of decoding instruction that met the highest standards of educational research. The NRP studied the combined results using a meta-analytic statistical analysis. A major focus of the review was to determine whether approaches that provide explicit instruction—a sequenced course of study that begins simply, and gradually grows toward greater complexity, with a systematic organization of teaching of phonics—are effective:

“Systematic phonics instruction makes a bigger contribution to children’s growth in reading than alternative programs providing unsystematic or no phonics instruction.”

National Reading Panel

“The hallmark of systematic phonics programs is that they delineate a planned, sequential set of phonic elements, and they teach these elements, explicitly and systematically” (Section 2, p. 99).

The National Reading Panel’s conclusion was that the studies suggested “systematic phonics instruction makes a bigger contribution to children’s growth in reading than alternative programs providing unsystematic or no phonics instruction” (Section 2, p. 92). The studies indicated that students at beginning reading levels were capable of being effectively taught using systematic phonics instruction (Section 2, p. 93). In addition to finding that systematic phonics improved general reading growth, the panel also concluded that systematic phonics instruction improved:

- the future reading growth of kindergartners and first graders who are at risk of reading problems;
- the abilities of disabled readers, who were defined by the NRP as having average cognitive abilities but low reading scores;
- spelling among kindergartners and first graders; and
- the reading achievement of children in both lower and middle socioeconomic status groups (Section 2, p. 95).

Shanahan and Beck (2006) suggest that the same studies that validate use of explicit phonics instruction for native speakers show the importance that a solid foundation in phonics has for English Language Learners. Studies such as that by Martinez (2011) have demonstrated that explicit phonics instruction has a considerable impact on ELLs’ general literacy development. Jamaludin, Alias, and Johari’s (2014) survey of research reported that the phonics instruction works backward to also improve phonological knowledge, including with ELL readers who have had limited exposure to English.

Early success in learning decoding and word identification strategies is crucial to continued success in reading (Wagner & Ridgeway, 2009), though there is some disagreement as to just how it functions to improve reading ability. Garcia & Cain (2014), for example, suggest that this early success results in a tendency of children to read more, which in turn results in increased reading achievement. Lack of success functions in the opposite direction: poorly performing readers becoming reluctant to read, so that they fail to put in the necessary time-on-task in reading. Ronald Carver's "rauding theory" (Carver, 2000), on the other hand, (combining reading with listening and speaking), posits that the ability to simply decode and identify words is sufficient in and of itself to lead to success in reading.

Whichever theory one might choose—and both may be right in different ways—the final conclusion is the same: research shows that phonics instruction is critical (Blevins, 2019). The oddities of the English language spelling system are obvious, but an understanding of phoneme-grapheme patterns is crucial, as the majority of English words are phonetically regular.

However, phonics ability does not develop in a vacuum. It is built on an understanding of and ability to work with the sounds of language and knowledge of letters (National Reading Panel, 2000, Section 2, p. 96). Morris, Bloodgood, Lomax, and Perney's longitudinal study of kindergartners and first graders (2003) indicated that the development of early reading abilities is largely sequential, with alphabet knowledge first and beginning consonant recognition occurring next with most children. Then children become able to understand the concept of a printed word and to recognize beginning and ending consonants. They then move on to advances in word recognition and beginning reading.



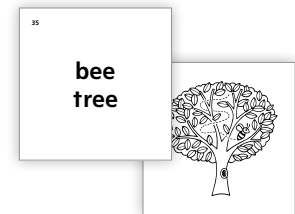
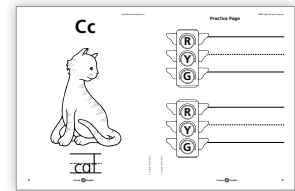
Phonics in SPIRE

The SPIRE curriculum provides sequential development of phonics concepts through intensive multisensory instruction, engagement in activities, and close monitoring to ensure mastery. Phoneme-grapheme relations are explicitly taught and reinforced in a variety of ways in the SPIRE program. In Pre-Level 1 SPIRE Foundations: Sounds Sensible, the scope and sequence of phonemes consists of 20 consonant sounds and the short a vowel sound. In Step 4 of SPIRE Foundations: Sounds Sensible lesson plans, students learn the letter name, its sound, and how to print its lowercase form. They also engage in a variety of games to review and reinforce learning. The final step is the Dictation Activity, where students first print letters, then one-syllable words.

In Level 1, students learn vowel concepts such as short *a* and *i*, digraphs such as *sh* and *wh*, and welded sounds such as *ang* and *ink*. By Level 3, they have advanced to learning suffixes such as *-s*, *-ness*, and *-ish* and some syllabication, as well as exceptions. At Level 6, they learn less frequent phonic elements and morphemes, such as the diphthongs *oi* and *oy*, the digraph *ph*, and the suffixes *-able* and *-age*. The complete list of concepts is provided in the SPIRE Scope and Sequence.

A letter, or letter group, and its corresponding sound might be introduced with a picture card portraying a key word that will help students remember the letter-sound relationship, as for example, a picture of a goat for the *oa* letter group (representing the long *o* sound). The teacher displays the picture to the students and explains the new concept, aided by lesson suggestions provided by SPIRE This initial teaching is carried out in the Introductory Lesson, while later Reinforcing Lessons build on this initial concept as students practice with sight words and decodable words, targeted to both the new concept and to reviewing earlier concepts. Later in the lesson, students may circle the letter as it occurs in a printed word list and practice blending the sounds of the letters in the words on the list. They may carry out segmentation activities on words that will appear later in the lesson in a reading activity. They may use the words in sample spoken sentences. Later, they may examine the words in printed sentences. A key objective, then, is to move from isolated study of the letter and its corresponding sound to its use in richer contexts.

Decoding and word identification are taught in a variety of ways to help meet the specific learning needs of the variety of students in any given classroom. Students engage in listening activities. They see words and word elements on cards, in word search activities, in sentences, and in stories. They trace letter shapes on their hands, then write letters using paper and pencil. They repeat word identification elements aloud. In Step 3, Word Building, students manipulate letters, an activity often known as *making* words. In a SPIRE lesson on the short *a* sound, for example, students first use letter tiles to form the word *bat* by touching the *b* letter tile and moving it to the first position, then doing the same with *a* and *t*. They then are asked to use the letter tiles to make another word (*hat*), and so forth (*flat*, *tab*, and *bag*). With each word, they finally blend (that is, synthesize) the letters by gliding their fingers under the word and saying



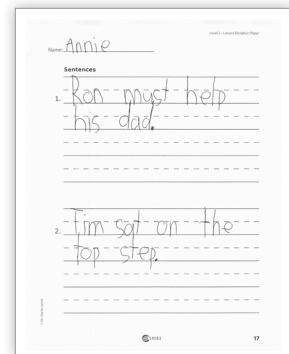
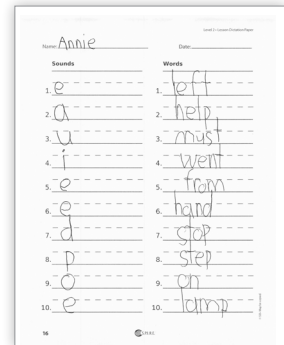
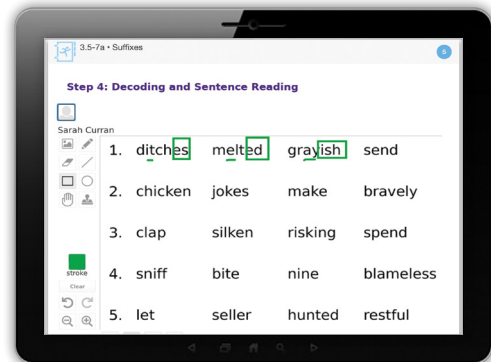
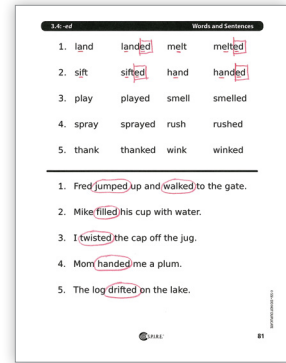
it aloud as a whole. Activities like these in the later lesson steps give practice in the concept presented and reinforce concepts from past lessons.

In Step 4: Decoding and Sentence Reading, students code sets of words for various phonic elements, depending on the lesson’s purpose. For example, they may underline the a in had and twenty-five other words. At each coding, they segment each sound of the word aloud (while pointing, as a kinesthetic representation of segmentation), then blend the segments to produce the entire word aloud (while gliding their fingers under the word as a kinesthetic representation of synthesizing). Step 5: Prereading also involves focus on the new concept, though now it is in the context of preparing to read—which they will do in Step 6. For example, a new word to appear in Step 6 may be introduced and examined extensively in Step 5, in terms of its phoneme–grapheme relationships.

Step 7: Sound Dictation provides additional multisensory phonics experiences to the students on the concepts they have learned. The teacher dictates up to ten sounds to students, one sound at a time. Students repeat each sound, then write the corresponding letter or letters. This provides students with kinesthetic/tactile reinforcement.

SPIRE also utilizes spelling activities to reinforce phonological awareness and decoding abilities. In Step 8, the Prespelling step of the SPIRE daily lesson, students may study the spelling of a concept-related word and relate it to its sounds. Step 9, the Spelling step, calls for explicit instruction and practice in spelling multiple words that include the concept being studied. Students spell the target words on dictation paper, providing kinesthetic/tactile reinforcement. While these two activities play an important role in reinforcing phonological awareness and decoding, they also, of course, address students’ spelling achievement. Martinez (2011) found that, with ELLs, phonics instruction alone is insufficient to promote spelling ability. Specific attention to spelling, such as that in SPIRE’s Steps 8 and 9, is necessary. SPIRE’s spelling activities provide, to ELLs and native speakers alike, that important attention.

A final culminating activity, Step 10: Sentence Dictation, has students demonstrate their concept learning from the lesson by writing sentences that have been dictated by the teacher. SPIRE also provides teachers with Alternate Dictation words and sentences, covering the same skills, for older students. In addition to the Introductory Lesson for each concept and the several associated Reinforcing Lessons, all of which follow the 10-step lesson format, students engage in Independent Practice as well. These activities closely correspond to the target concept. While much of the time-on-task in these activities is independent, the teacher remains in charge of this time, giving directions, monitoring student responses, and covering key teaching points.



Fluency and Automaticity

Samuels (2012) defines fluency as “the ability to decode and comprehend text at the same time” with “accuracy of word recognition, speed of reading, and the ability to read orally with expression” (p. 4). Fluency is often assessed with measurements of oral reading speed in words per minute, with word identification accuracy, and by evaluations of oral reading expression. It is widely recognized as a key objective of reading instruction (International Reading Association and National Association for the Education of Young Children, 1998). The importance of children developing into fluent readers goes well beyond issues of oral reading performance. Fluent reading and effective comprehension go hand in hand (Herbers, et al., 2012). In addition, Hitchcock, Prater, and Dowrick (2004) have reported that improvement in the fluency of learning-disabled first grade students—as a result of intervention instruction—was accompanied by positive teacher and parent ratings about children’s confidence, attention, effort, and reading enjoyment.

FLUENCY:

“The ability to decode and comprehend text at the same time” with “accuracy of word recognition, speed of reading, and the ability to read orally with expression.”

Samuels (2012, p. 4)

Key research in the study of reading fluency has been carried out over a period of decades by S. Jay Samuels (LaBerge & Samuels, 1974; Samuels, 2002, 2012), whose theory of automaticity is closely associated with reading fluency. Automaticity is the ability to recognize words instantly and without significant cognitive effort, thus freeing up the reader to devote cognitive resources to the higher levels of comprehension and thinking. Fluent reading requires this ability to decode words with automaticity (Herbers, et al., 2012; Garcia & Cain, 2014). Jenkins, et al. (2003), and Rasinski, Reutzel, Chard, and Linan-Thompson, (2011), for example, found that poor word identification skills are associated with poor reading fluency.

Samuels’s research on automaticity (2002) suggests that young readers proceed through three stages of word recognition development on their way to fluency and comprehension: non-accurate; accurate but not automatic; accurate and automatic. Samuels’s third stage is what other researchers have called the Fluency Stage. At the culmination of this stage, students “can read orally with accuracy, speed, and normal expression, as if they were speaking rather than reading from text. When reading from a text, they can decode and comprehend simultaneously” (Samuels, 2002, p. 172).

Failure to achieve fluency in moving through Samuels’s first two stages is called dysfluency. There are four key causes of dysfluency. Students, especially those who are struggling with reading, may be forced to move too quickly through the reading curriculum, thus spending an inordinate amount of time trying to read text at their frustration levels. Some approaches to reading may present a limited array of word identification strategies instead of emphasizing flexibility. There may be no effort to help students apply the strategies they have learned in actual reading situations. Finally, and very importantly, some classrooms and homes may not encourage reading.

Fluent reading cannot occur in a vacuum. Children acquire fluency on the basis of a firm foundation of word recognition abilities. Schwanenflugel, et al. (2004) investigated the aspect of fluency called prosodic reading, the ability to read with expression. The study's results found that children with better developed decoding abilities demonstrated superior fluency in their reading.

Children also benefit from the guided transfer of their word recognition abilities to real reading situations. The National Reading Panel (2000), in its recommendations about word recognition instruction, noted that instruction in word recognition “is a means to an end”—

that it is essential to ensure that children “know how to apply this knowledge in their reading and writing” (Section 2, p. 96). The panel noted that reading programs must not only focus on word recognition but must provide children opportunities to put their word recognition abilities to use in real reading:



“Educators must keep the end in mind and ensure that children understand the purpose of learning letter-sounds and are able to apply their skills in their daily reading and writing activities” (Section 2, p. 96).

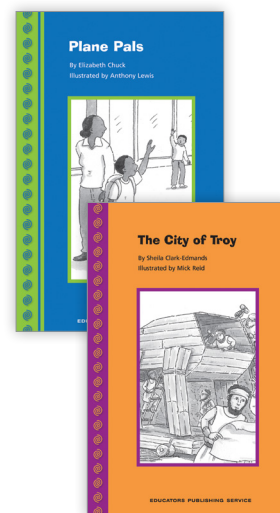
Fluency and Automaticity in SPIRE

SPIRE incorporates fluency practice with the study of decoding. Rather than waiting until a time at which all students have mastered decoding to introduce practice in fluency, SPIRE provides daily fluency activities that are integrated with the students' study of decoding, so as to allow the students successful experiences in fluent reading. A recent survey of intervention research by Suggate (2016) finds that such "mixed interventions" (that is, interventions such as SPIRE, targeting decoding, fluency, and even comprehension) have the highest long-term effectiveness.

The SPIRE curriculum addresses the issue of fluency most directly in Step 6: Reading. Again, actual activities will depend on the lesson level and on where in the introduction-to-reinforcement process the particular segment lies. Students may do a Word Search, then read sentences and carry out analysis activities by marking the words. For example, they may underline the new sight word (*the*) and circle words illustrating the target concept (for short a: *cat*, *rat*, *fast*). This may be a point at which a sight word that does not fit typical phonics patterns (such as *the*) will be taught. In this part of the lesson, students may engage in repeated reading of sentences and, during reinforcing lessons, the reading of a passage. Students are asked to read the passage silently and then to read it aloud several times as they learn to produce it accurately and with good expression and speed. Students also participate in a one-minute timed fluency drill to obtain a words-correct-per-minute score (wcpm) and to have the opportunity to practice reading the passage with fluency. In their overview of research, Rasinski, et al. (2011) found that such repeated readings are key to the development of fluency.

Each of the Levels 1–6 of SPIRE includes twenty fully illustrated Decodable Readers, allowing students to apply newly learned concepts to connected, decodable text while promoting enjoyment of the reading process. Part of the success of any fluency development program is the ability to provide sufficient instructional scaffolding to ensure student success. A key ingredient the instructional scaffolding SPIRE provides is the use of decodable text in its illustrated readers. Such text ensures that students are not reading at their frustration level, since the phonic elements and words used have been previously taught. If any words may present difficulty for students, they are taught as part of the Prereading activity.

Decodable text is of particular use with children at the developmental levels addressed by the SPIRE curriculum, having "learned enough letter-sound correspondences to begin to sound out words, but not enough to handle the whole range of English patterns presented in uncontrolled text" (Mesmer, 2001, p. 136). The National Reading Panel's (2000) survey of the literature noted that many of the most effective early reading programs used decodable text.



Vocabulary and Comprehension Development

Vocabulary knowledge is essential if students are to make meaning from the printed page; numerous studies reveal that word knowledge and comprehension are inextricably linked. Even students who are skilled in phonics will read with diminished comprehension after third grade unless they are exposed to a wide range of vocabulary words (Chall, Jacobs, and Baldwin, 1990). Students benefit from discussing new vocabulary words before they encounter them in text and from repeated exposure to new words in a variety of contexts (McKeown & Beck, 2011).

The National Reading Panel (NRP) report (2000) strongly advocates purposeful, goal-centered reading in multiple genres and the explicit, formal teaching of comprehension strategies. Prereading strategies such as predicting and activation of prior knowledge schemas are also recommended by the NRP. Vacca and Vacca (2010) suggest that the prereading component of a lesson have three purposes: to provide students with purpose and direction, to support them with necessary prior knowledge, and to motivate them to read.

As Pressley has noted, “A good reader does not just dive into a text, proceeding from beginning to end” (2002b, p. 294). Instead, students should be taught to be discerning, active readers. They use their experience and knowledge of the world, their knowledge of vocabulary and language structure, and their knowledge of reading strategies. They should be taught to monitor their understanding of a text.

Discussion of the story is guided by teacher questions, one of the comprehension development strategies that is solidly supported by research (National Reading Panel, 2000). Teacher questions do not simply focus on the literal meanings in the story, but help children become more personally involved in the reading by asking higher-level questions.

The prereading component of a lesson should have three purposes:

- to provide students with purpose and directions
- to support them with necessary prior knowledge
- to motivate them to read

Vocabulary and Comprehension Development in SPIRE

The SPIRE curriculum is designed to lead students to apply their decoding ability for comprehension in reading situations. Three major components of the daily lesson plan help students use their word-level learning for the purpose of comprehension: Step 4 (Decoding and Sentence Reading), Step 5 (Prereading), and Step 6 (Reading). Research indicates that combining decoding with more complex tasks results in the maximum increase in reading ability (McArthur, et al., 2015).

Step 4, the Decoding and Sentence Reading step, allows students to use their newly learned decoding and word identification strategies in actual reading. As new decoding strategies are taught, students are heavily scaffolded to ensure success in their reading. Reading is provided in individual sentences that help students apply the new strategy and to reinforce previously learned strategies.

Actual vocabulary building occurs in a direct way as students are exposed to unfamiliar words in the context of studying phoneme-grapheme relationships. In a Level 6 lesson on the oi diphthong, for example, teachers are given instructional ideas for dealing with vocabulary words such as *turmoil*, *cloister*, and *appoint*.

The Prereading component (Step 5) is a crucial preparatory step for successful reading. SPIRE teachers prepare students in varying ways depending on the purpose of the lesson. They may review a decoding principle so that it can be applied in an automatic way during the Step 6: Reading/Reading Comprehension step. In each Introductory Lesson, students work on a Word Find activity in their workbooks, identifying and reading words containing the target concept for the lesson. The students then move on to identify the new concept as part of sentence reading.



In the Reinforcing Lessons for each concept, students read passages of both fiction and nonfiction texts. Teachers provide necessary prior knowledge in Step 5 to support that reading, including needed vocabulary terms. They also provide motivation to read, and specific directions for reading. An important component of the Prereading step is the connection of the reading topic to the students' own lives—for example, before a story about a baseball game, the teacher may ask students to share their own experiences with baseball, helping them see the relevance of the story to their lives.

Step 6, the Reading step, is the major comprehension development step in SPIRE. At the beginning of an instructional sequence of lessons, when decoding strategies are introduced, reading is heavily scaffolded and is limited to individual sentences. Sentences may be read several times. This makes use of the power of repeated readings for development of fluency and comprehension.

Because the passages are not illustrated, students also utilize visualization strategies to extend their reading comprehension skills. They can then move on to the illustrated Decodable Readers, to compare and contrast the pictures in their own minds with an illustrator’s depiction of events in the story.

As each sequence of lessons progresses, and student word-level learning becomes more automatic, the reading requirement in Step 6 becomes more sophisticated. Students are prepared to read the story in the Prereading step, then actually carry out a teacher-guided reading of a passage. The work continues to be scaffolded by the use of controlled text that provides students with greater potential for successful word identification, and by repeated readings. Discussion

of the story is guided by teacher questions that do not simply focus on the literal meanings in the story, but help students become more personally involved in the reading—including higher-level questions. A teacher-led comprehension activity follows, using a specific comprehension skill such as cause and effect, sequencing, or main idea and details. Teachers give a brief explanation of the comprehension skill, and they help students find examples from the story to complete the Graphic Organizer in their workbooks.



In addition to the actual lesson components, independent activities for comprehension, reinforcement, and practice are provided. For example, in one lesson, concept pictures (such as a frog, a log, and a fox) are at the top of the page. Students write the appropriate word from the bottom of the page beneath the matching picture at the top.

Response to Intervention (RTI), Multi-Tier System of Supports (MTSS), and Assessment

Response to Intervention (RTI) is a system for identifying struggling students and a model of instruction that provides support, instruction, and assessment for them. It includes early intervention to prevent reading failure. RTI is a problem-solving approach that utilizes performance data to inform decisions for instruction.

Instead of waiting for students to fail on high-stakes tests before providing services, the Individuals with Disabilities Education Improvement Act (IDEA, 2004) encourages the use of RTI and mandates that schools provide a more intensive level of instruction when a student's response to research-based general classroom instruction is unsatisfactory. As such, RTI is a more sensible plan for providing prompt help for struggling learners and special education students than past policies (Gersten & Dimino, 2006).

RTI is often conceptualized as a three-tier model (Fuchs, Fuchs, & Vaughn, 2008; Shores & Bender, 2007).

- **Tier 1** students receive core instruction, usually provided to the whole class.
- **Tier 2** students receive targeted intervention. Tier 2 instruction is generally supplemental to Tier 1 classroom instruction and is provided in small groups, often within the classroom or a resource room. According to Vaughn and Roberts (2007), as many as 20 to 30 percent of students will require supplemental Tier 2 instruction to address reading or literacy difficulties.
- **Tier 3** students need intensive intervention. These interventions involve instruction that may occur in a one-on-one instructional situation in a resource room or clinic setting. Shores and Bender (2007) estimate that 5 to 6 percent of students will need this more intensive Tier 3 instruction.

It is common to hear the terms Response to Intervention (RTI) and Multi-Tier System of Supports (MTSS) used interchangeably. However, the newer MTSS framework, adopted by more than 40 states, is a more comprehensive model, aiming to meet both the academic and behavioral needs of all students by providing a continuum of multiple supports. RTI, with its tiered approach to instruction and intervention, where Tier 1 is instruction for all students, is a part of the larger MTSS. This puts SPIRE squarely in place as part of both initiatives (National Center for Learning Disabilities, 2012).

Response to Intervention is conceptualized as a three-tier model:

TIER 1

Students receive core instruction.

TIER 2

Students receive targeted intervention.

TIER 2

Students need intensive intervention.

Reading assessment allows us to evaluate and understand the strengths and needs of each student. Recent advances in understanding of educational process have highlighted the importance of assessment to the achievement of students (Gersten, et al., 2008). Part of this new understanding involves the recognition that assessment is only useful if it is used to plan instruction and to revise those plans when the need arises.

“It is the actions around assessment—the discussion, meetings, revisions, arguments, and opportunities to continually create new directions for teaching, learning, curriculum, and assessment—that ultimately have consequence. The ‘things’ of assessment are essentially useful as dynamic supports for reflection and action, rather than as static products with value in and of themselves” (Darling-Hammond, Aness, & Falk, 1995, p. 18).

Assessment can be divided into informal and formal assessments to show progress within a program and outside of a program. Informal assessments take place during or at the conclusion of instruction, while formal assessments take place at set, consistent times outside of instruction. Within a program, there are also formative and summative assessments. Formative assessment includes progress monitoring and assures that the instruction meets the student’s needs. Summative assessment refers to data gathered at the end of a unit, level, or year to determine the effectiveness of instruction.

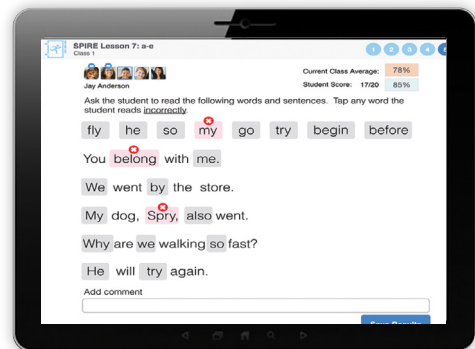
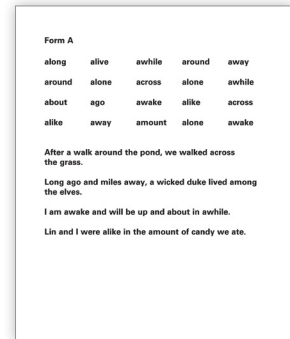
Since assessment plays such an important role in teaching and learning, educators have come to recognize several important ways to implement effective assessment systems. An important aspect of an effective assessment system is the provision of multiple measures, a diverse set of assessments designed to provide comprehensive feedback as called for—to give just one example—by the IDEA (2004) guidelines to “use a variety of assessment tools and strategies to gather relevant functional, developmental, and academic information” (614, b, 2). Multiple measures are useful for both RTI placement (Gersten, et al., 2008) and ongoing instructional feedback (Biancarosa & Snow, 2004, p. 19).

RTI, Differentiation, Assessment, and SPIRE

While SPIRE is most appropriate for striving readers in Tiers 2 and 3, the program has been used in a variety of settings, whether classroom, small group, or one-on-one. The depth, nature, and intensity of skill reinforcement available in SPIRE is unique in educational publishing and provides the resources needed to differentiate instruction. For example, in Lesson 3 of Level 3, the targeted concept is the ay letter group. After the ay Introductory Lesson, four additional Reinforcing Lessons are provided, each with a reading passage, Independent Practice, and extensive individual activities. A teacher can differentiate instruction by choosing the number of Reinforcing Lessons to use, based on students' individual needs. Tier 2 students may need only the Introductory Lesson and two reviews with Reinforcing Lessons, while Tier 3 students may need all the Reinforcing Lessons. School districts facing serious achievement challenges may use SPIRE to teach entire classes of Tier 1 students. Using SPIRE with groups of striving readers would be considered Tier 2, and Tier 3 would include students who need intensive one-on-one or small group instruction with SPIRE.

SPIRE provides four types of assessments. Pre- and Post-Level Assessments can be administered at the start and conclusion of each of the six levels to compare gains from instruction. A Mid-Level Assessment measures students' mastery of taught concepts halfway through each level. Concept Mastery Fluency Drills provide teachers with a words-correct-per-minute score (wcpm) and are administered at the end of each Introductory Lesson. The centerpiece of SPIRE's assessment system is the Concept Assessment at the end of each Reinforcing Lesson. These assessments ensure that students have mastered the key concepts in the lesson before moving on to new concepts.

Frequent progress monitoring ensures that goals and expectations are clear, so that educators can adapt instruction as needed. Most of the assessments in SPIRE are formative—to inform and revise instruction. Only the Post-Level Assessment is summative. All of the assessments provide opportunities for data collection to support progress monitoring and evaluating instruction.



SPIRE STAR™ Teacher Management System

In addition to print materials, SPIRE is supported by STAR™, a Digital Teacher Companion that provides instruction and assessment parallel to those in print. Through STAR, presentation tools and printable PDFs are available at point of use, with teachers using their devices to present concepts while students practice with their manipulatives and workbooks.

A vital part of STAR is its online reporting and management system. The management system organizes, analyzes, and reports data from all four types of SPIRE assessments. Such technology-supported data systems improve schools' ability to analyze and share information needed for educational decision-making (ERIC Clearinghouse on Disabilities, 2003). It has long been clear that technology is most effective when it is integrated in a seamless manner to support classroom instruction (Dias, 1999; Williams, Rosin, & Hirst, 2011).

Teachers and schools can use the reporting system as a tool for monitoring student progress. The data, reported in tables that are easy for educators and parents to understand, allow schools to identify students who need instructional modifications. The data can also be used to group students who have similar literacy needs, allowing teachers to provide them with differentiated instruction that is targeted to their needs.

The STAR management and reporting system is designed according to federally approved guidelines for data-based decision-making, such as the four-part model prescribed by the ERIC Clearinghouse on Disabilities (2003):

1. Data should be readily available. STAR reports can be accessed at any time.
2. Procedures for collecting data must be easy to use and not require excessive staff time and resources. STAR's collection of data is automatic, requiring no additional teacher efforts.
3. Purposes for collecting data must be relevant to ongoing activities. With STAR, all data collected is directly relevant to the mastery of the target concepts.
4. Only a small number of questions should be addressed. STAR does not overwhelm teachers with data. The data collected can be immediately acted upon.

Research on technology-based management systems has been positive. Teachers continue to play the central role in decision-making, able to interpret and apply the data in an informed manner (Wayman, et al., 2007). Systems such as STAR's, when used to carry out modifications in instruction, positively impact student learning (Stecker, Fuchs, & Fuchs, 2005). Gehring (2005) notes the importance of such "technologies that help educators analyze student achievement data and then adjust their teaching based on what those results show" (p. 38). STAR's real-time progress monitoring allows the teacher to quickly gauge individual student performance.

The management system provides data records and aggregated or individual performance reports. The Carnegie Foundation's Reading Next report on improving literacy instruction calls for such data collection: "Data should be cataloged on a computer system that would allow teachers, administrators, and evaluators to inspect student progress individually and by class" (Biancarosa & Snow, 2004, p. 19). In STAR, this type of data collection allows for a careful, studied analysis of whether students are moving forward adequately in mastering the concepts.

SPIRE as Intervention for Students with Dyslexia

While dyslexia has long been understood as the specific learning disability related to reading, research over the past 20 years has helped clear up many misconceptions that arose almost one hundred years ago in pre-scientific attempts to address the needs of struggling readers. Many dyslexic students will be classified as Tier 3 readers, an accurate assessment of the serious nature of its effects on learning to read. Many others, however, may have needs that are not so clearly recognized. They may draw upon other strengths to mask their difficulties and be placed in Tier 2 instruction or even in Tier 1, the general classroom (van Viersen, Kroesbergen, Slot, & de Bree, 2016).

In recent years, a grassroots movement, consisting mainly of parents with children who have dyslexia, has been active in alerting state legislators to the needs of dyslexic children. In response, many states have enacted legislation designed to strengthen the state's policies pertaining to children with dyslexia. Fortunately, this new attention to dyslexia comes at a time when scientific research, including neurological, brain-based research, has corrected some old, incorrect stereotypes.

The word *dyslexia* comes from the Greek roots *dys* (meaning *difficult, bad, or abnormal; as in dysfunction, disaster*) and *lexis* (meaning *word, or having to do with words or language; as in lexicon*). Dyslexia is often defined as a brain-based, or neurological, condition, and some dyslexia research uses functional magnetic resonance imaging (fMRI) of the brain. Dyslexia is usually distinguished from reading difficulties arising from instructional circumstances, inadequate intelligence, and factors related to social, economic, or cultural issues.

In 1993, Castles and Coltheart looked at the many symptoms identified by researchers and educators as resulting from dyslexia (such as impairments in spelling, phonological processing, auditory processing, short-term memory, morphological awareness, or rapid naming—and many others). They suggested

DYSLEXIA:

A brain-based, or neurological, condition.

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that there is more than one subtype of dyslexia, a suggestion that was followed by a barrage of research studies purporting to identify one or more of the subtypes.

One theory that became predominant, though by no means undisputed, was the phonological deficit hypothesis. This viewpoint was advocated by two influential researchers, Keith Stanovich (Metsala, Stanovich, & Brown, 1998) and Frank Vellutino (Vellutino, Fletcher, Snowling, & Scanlon, 2004). This theory suggests that dyslexia results from difficulties in abilities to manipulate the sounds of language. A typical phonological awareness task is to ask a student to: “Say the word fork. Now take the first sound in fork and replace it with the first sound of the word pickle. What is the new word?”

Yale University’s Sally Shaywitz has continued advocacy for the phonological deficit theory in her best-seller, *Overcoming Dyslexia* (2003).



Another dominant theory of the underpinnings, or etiology, of dyslexia

is the double-deficit hypothesis (Wolf & Bowers, 1999). Advocates of this theory agree with Stanovich and Vellutino that phonological deficits could be one type of dyslexia, but they also suggest that rapid automatized naming (RAN) could be another type and that a third type—both phonological and RAN together (the double-deficit)—results in the worst symptoms of the three. A typical RAN task is to provide a child with a row of pictures and use a timer to determine how long it takes the child to name them all. This is seen as a speed-of-cognition task.

Still yet others emphasize that dyslexia involves dysfunctions in either auditory or visual processing. Advocates of this position find support for their ideas in brain imaging studies that find some anomalies in readers’ activation of auditory or visual brain systems. These advocates also draw conclusions that students who differentially have weaknesses in sight word development or phonics development suffer from dysfunctions in visual or auditory processing, respectively.

Other researchers, such as Tamboer, Vorst, and Oort (2016), continue to find evidence that there is only one type of dyslexia. Such researchers usually focus their research studies on trying to identify test batteries that will accurately indicate whether a child has dyslexia.

While there is no shortage of researchers and educators who have strong opinions on the existence of various dyslexia subtypes, a more perceptive conclusion for now is drawn by Ramus and Ahissar: “The large body of data on

cognitive deficits in dyslexia fails to fit a single coherent theoretical framework” (2012, p. 105). Even brain imaging studies, which have received a great deal of media attention, need a tremendous amount of refinement before they will be of help in providing definitive answers.

A final conclusion as to the etiology and brain structure of dyslexia may be some years (or decades) in the future. The good news is that the instructional implications of addressing the needs of dyslexic students are much clearer, though they are challenging for parents, students, teachers and schools alike.

In fact, the basic principles of intervention with dyslexia are much the same as those detailed earlier in this paper’s discussion of the needs of struggling readers, in general, and of how SPIRE is designed to meet those needs: explicit instruction, systematic instruction, and sequenced instruction. A key difference has to do with the intensiveness of instruction: Dyslexic students (or Tier 3 students) need engagement in highly intensive instruction. They need sequenced repetition and practice, carried out in a varied and engaging manner, that continues until they demonstrate mastery. They also need highly effective instructional methods, the multisensory strategies that take advantage of visual, auditory, and kinesthetic/tactile learning. As noted earlier, there is a strong history of research that supports these instructional policies for struggling students. These policies are at the heart of SPIRE, which is an approach based on seminal ideas of Samuel Orton and Anna Gillingham. Research specifically on students classified as dyslexic also supports these policies, as does research showing that broadening instruction beyond simply phonics to include other aspects of the reading process (such as whole words, vocabulary, comprehension), as happens in SPIRE, is maximally effective (McArthur, et al., 2015).

While spelling presents a challenge for all students, and SPIRE includes spelling activities as part of its fast-paced, intensive 10-Step Lesson Plan, spelling for students with dyslexia presents particular challenges. The cognitive demands of spelling slow down the writing of dyslexic students. Spelling affects their word choices during writing and results in both slower writing time and poorer quality (Sumner, Connelly, & Barnett, 2016). SPIRE’s inclusion of attention to spelling is an important facet of its program when working with students who have dyslexia.

Conclusion

The past fifty years have seen researchers in the field of reading and literacy provide a rich array of studies that can guide teachers in their choice of curricula. The SPIRE curriculum is based on the most solid findings of these research studies in its direct, systematic, and sequential approach to guiding students in literacy acquisition. Students are led to proficiency in the foundations of reading through teacher-based instruction in letter identification and phonological awareness. At the same time, they are guided to apply their learnings to the higher-level skills involved in word identification and the end goals of fluency and comprehension.

References

- Adams, M. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.
- Balajthy, E., & Lipa-Wade, S. (2003). *Struggling readers: Assessment and instruction in grades K-6*. New York: Guilford Press.
- Biancarosa, C., & Snow, C. E. (2006). *Reading next: A vision for action and research in middle and high school literacy: A report to Carnegie Corporation of New York (2nd Ed.)*. Washington, DC: Alliance for Excellent Education.
- Blevins, W. (2019). *Literacy Leadership Brief: Meeting the Challenges of Early Literacy Phonics Instruction*. Newark, DE: International Literacy Association.
- Bond, G. L., & Dykstra, R. (1997). The Cooperative Research Program in first-grade reading instruction. *Reading Research Quarterly*, 3, 348-427. Originally published 1967.
- Carver, R. P. (2000). *The causes of high and low reading achievement*. Mahwah, NJ: Lawrence Erlbaum.
- Castles, A., & Coltheart, M. (1993). *Varieties of developmental dyslexia*. *Cognition*, 47, 149-180.
- Chall, J. (1983). *Stages of reading development*. New York: McGraw-Hill.
- Chall, J. S. (1996). *Learning to read: the great debate (3rd ed.)*. New York: Harcourt Brace. Originally published 1967.
- Chall, J. S., Jacobs, V., & Baldwin, L. (1990). *The reading crisis*. Cambridge, MA: Harvard University Press.
- Cowen, C. (2016). *What is Structured Literacy?* Baltimore, MD: International Dyslexia Association.
- Craig, S. (2003). The effects of an adapted interactive writing intervention on kindergarten children's phonological awareness, spelling, and early reading development. *Reading Research Quarterly*, 38, 438-440.
- Darling-Hammond, L., Ancess, J., & Falk, B. (1995). *Authentic assessment in action: studies of schools and students at work*. New York: Teachers College Press.
- Dias, L. B. (1999). *Integrating technology. Learning and Leading with Technology*, 27, 10-13, 21.
- ERIC Clearinghouse on Disabilities and Gifted Education. (2003). Using data: Innovative ways to improve results for students with disabilities. *Research connections in special education*, No. 13. Arlington, VA: Office of Special Education Programs (OSEP).
- Fuchs, D., Fuchs, L.S., & Vaughn, S. (Eds.). (2008). *Response to intervention*. Newark, DE: International Reading Association.
- Garcia, J. R., & Cain, K. (2014). Decoding and reading comprehension: A meta-analysis to identify which reader and assessment characteristics influence the strength of the relationship in English. *Review of Educational Research Online First*, 84, 74-111.
- Gersten, R., Compton, D., Connor, C. M., Dimino, J., Santoro, L., Linan-Thompson, S., and Tilly, W. D. (2008). *Assisting students struggling with reading: Response to intervention and multi-tier intervention for reading in the primary grades. A practice guide*. (NCEE 2009-4045). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.
- Gersten, R., & Dimino, J. A. (2006). RTI (Response to Intervention): Rethinking special education for students with reading difficulties (yet again). *Reading Research Quarterly*, 41, 99-108.
- Herbers, J. E., Cutuli, J. J., Supkoff, L. M., Heistad, D., Chan, C-K., Hinz, E., & Masten, A. S. (2012). Early reading skills and academic achievement trajectories of students facing poverty, homelessness, and high residential mobility. *Educational Researcher*, 41, 366-374.
- Hiebert, E. H., & Pearson, P. D. (2012-2013). What happens to the basics? *Educational Leadership*, 70, 48-53.
- Hitchcock, C. H., Prater, M. A., & Dowrick, P. W. (2004). Reading comprehension and fluency: Examining the effects of tutoring and video self-modeling on first-grade students with reading difficulties. *Learning Disability Quarterly*, 27, 89-103.
- Individuals with Disabilities Education Improvement Act (IDEA) of 2004. Federal Register 71 614 (b) (6) (2004).
- International Dyslexia Association. (1997). *Informed instruction for reading success: Foundations for teacher preparation. A position paper of the IDA*. Baltimore, MD: International Dyslexia Association.
- International Dyslexia Association. (2009). *IDA Position Statement: Dyslexia treatment programs*. Baltimore, MD: IDA.
- International Reading Association. (1997). *The role of phonics in reading instruction: A position statement of the IRA*. Newark, DE: IRA.
- International Reading Association. (1998). *Phonemic awareness and the teaching of reading: A position statement of the Board of Directors*. Newark, DE: IRA.
- International Reading Association. (2009). *New literacies and 21st century technologies: A position statement*. Newark, DE: IRA.
- International Reading Association and National Association for the Education of Young Children. (1998). *Learning to read and write: Developmentally appropriate practices for young children. Joint position statement*. Newark, DE: IRA and NAEYC.

- Jamaludin, K. A., Alias, N., & Johari, R. (2014). Research and trends in studies of phonological knowledge and reading development: A review of selected journals. *The Malaysian Online Journal of Educational Science*, 2, 27–36.
- Jenkins, J. R., Fuchs, L. S., van den Broek, P., Espin, C., & Deno, S. L. (2003). Sources of individual differences in reading comprehension and fluency. *Journal of Educational Psychology*, 95, 719–729.
- Juel, C., & Minden-Cupp, C. (2000). Learning to read words: Linguistic units and instructional strategies. *Reading Research Quarterly*, 35, 458–492.
- Kulik, J. (1994). Meta-analytic studies of findings on computer-based instruction. In E.L. Baker & H.F. O’Neil (Eds.), *Technology assessment in education and training* (pp. 9–33). Hillsdale, NJ: Erlbaum.
- LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology*, 6, 293–323.
- Leppanen, U., Niemi, P., Aunola, K., & Nurmi, J. (2004). Development of reading skills among preschool and primary school pupils. *Reading Research Quarterly*, 39, 72–93.
- Lyon, G. R. (1998). *Overview of reading and literacy initiatives*. Washington, DC: National Institute of Child Health and Human Development.
- Martinez, A. M. M. (2011). Explicit and differentiated phonics instruction as a tool to improve literacy skills for children learning English as a foreign language. *GIST Education and Learning Research Journal*, 6, 25–49.
- McArthur, G., Castles, A., Kohnen, S., Larsen, L., Jones, K., Anandakumar, T., & Banales, E. (2015). Sight word and phonics training in children with dyslexia. *Journal of Learning Disabilities*, 48, 391–407.
- McCulley, L. V., Katz, S., & Vaughn, S. (2013). Reading instruction and students with learning disabilities. In J. P. Bakken, F. E. Obiakor, & A. F. Rotatori (Eds.), *Learning disabilities: Practice concerns and students with LD* (pp. 19–44). Bingley, United Kingdom: Emerald Group.
- McKeown, M. G., & Beck, I. L. (2011). Making vocabulary interventions engaging and effective. In R. E. O’Connor & P. F. Vadasy (Eds.), *Handbook of reading interventions* (pp. 138–168). New York: Guilford.
- Mesmer, H. A. E. (2001). Decodable text: A review of what we know. *Reading Research and Instruction*, 40, 121–142.
- Metsala, J. L., Stanovich, K. E., & Brown, G. D. A. (1998). Regularity effects and the phonological deficit model of reading disabilities: A meta-analytic review. *Journal of Educational Psychology*, 90, 279–293.
- Morris, D., Bloodgood, J. W., Lomax, R. G., & Perney, J. (2003). Developmental steps in learning to read: A longitudinal study in kindergarten and first grade. *Reading Research Quarterly*, 38, 302–328.
- National Center for Learning Disabilities. (2012) *Issue brief: Multi-tier system of supports a.k.a. response to intervention (RTI)*, Washington, DC: NCLD.
- National Reading Panel. (2000). *Report of the National Reading Panel: Reports of the subgroups*. Washington, DC: National Institute of Child Health and Human Development Clearinghouse.
- NICHD Early Childhood Care Research Network. (2004). Multiple pathways to early academic achievement. *Harvard Educational Review*, 74, 1–29.
- Nichols, W. D., Rupley, W. H., Rickelman, R. J., & Algozzine, B. (2004). Examining phonemic awareness and concepts about print patterns of kindergarten children. *Reading Research and Instruction*, 43, 56–81.
- O’Connor, R. E. (2011). Phoneme awareness and the alphabetic principle. In R. E. O’Connor & P. F. Vadasy (Eds.), *Handbook of reading interventions* (pp. 9–26). New York: Guilford Press.
- Oudeans, M. K. (2003). Integration of letter-sound correspondences and phonological awareness skills of blending and segmenting: A pilot study examining the effects of instructional sequence on word reading for kindergarten children with low phonological awareness. *Learning Disabilities Quarterly*, 26, 258–280.
- Pressley, M. (2002). Effective beginning reading instruction. *Journal of Literacy Research*, 34, 165–188.
- Ramus, F. & Ahissar, M. (2012). Developmental dyslexia: The difficulties of interpreting poor performance, and the importance of normal performance. *Cognitive Neuropsychology*, 29, 104–122.
- Rasinski, T. V., Reutzel, D. R., Chard, D., & Linan-Thompson, S. (2011). Reading fluency. In M. Kamil, D. Pearson, E. Birr Moje, & P. Aflerbach (Eds.), *Handbook of Reading Research* (Vol. 4, pp. 286–319). New York: Routledge.

- Samuels, S. J. (2002). Reading fluency: Its development and assessment. In A. E. Farstrup & S. J. Samuels (Eds.), *What research has to say about reading instruction* (3rd ed., pp. 166–183). Newark, DE: International Reading Association.
- Samuels, S. J. (2012). Reading fluency: Its past, present, and future. In T. Rasinski, C. Blachowicz, & K. Lems (Eds.), *Fluency instruction: Research-based best practices* (2nd ed., pp. 3–16). New York: Guilford.
- Schwanenflugel, P. J., Hamilton, A. M., Kuhn, M. R., Wisenbaker, J. M., & Stahl, S. A. (2004). Becoming a fluent reader: Reading skill and prosodic features in the oral reading of young readers. *Journal of Educational Psychology*, 96, 119–129.
- Shanahan, R., & Beck, I. (2006). Effective literacy teaching for English–language learners. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners: Report of the National Literacy Panel on language minority children and youth*. New Jersey: Lawrence Erlbaum.
- Shaywitz, S. (2003). *Overcoming dyslexia*. New York: Knopf.
- Shores, C., & Bender, W. N. (2007). *Response to intervention: A practical guide for every teacher*. Thousand Oaks, CA: Corwin Press.
- Snow, C., Burns, M. S., & Griffin, P. (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Spiro, R. J. (2001). Principled pluralism for adaptive flexibility in teaching and learning to read. In R. F. Flippo (Ed.), *Reading researchers in search of common ground* (pp. 92–97). Newark, DE: International Reading Association.
- Stecker, P. M., Fuchs, L. S., & Fuchs, D. (2005). Using curriculum-based measurement to improve student achievement: Review of research. *Psychology in the Schools*, 42, 795–819.
- Suggate, S. P. (2016). A meta-analysis of the long-term effects of phonemic awareness, phonics, fluency, and reading comprehension interventions. *Journal of Learning Disabilities*, 49, 77–96.
- Sumner, E., Connelly, V., & Barnett, A. L. (2016). The influence of spelling ability on vocabulary choices when writing for children with dyslexia. *Journal of Learning Disabilities*, 49, 293–304.
- Tamboer, P., Vorst, H. C. M., & Oort, F. J. (2016). Five describing factors of dyslexia. *Journal of Learning Disabilities*, 49, 466–483.
- U.S. Office of Education. (2004). *Questions and answers on No Child Left Behind—Reading*. Washington, DC: USOE.
- Vacca, R. T., & Vacca, J. L. (2010). *Content area reading: Literacy and learning across the curriculum* (11th ed.). New York: Pearson.
- Van Viersen, S., Kroesbergen, E. H., Slot, E. M., & de Bree, E. H. (2016). High reading skills mask dyslexia in gifted children. *Journal of Learning Disabilities*, 49, 189–199.
- Vaughn, S., & Roberts, G. (2007). Secondary interventions in reading: Providing additional instruction for students at-risk. *Teaching Exceptional Children*, 39, 40–46.
- Vellutino, F. R., Fletcher, J. M., Snowling, M. J., & Scanlon, D. M. (2004). Specific reading disability (dyslexia): What have we learned in the past four decades? *Journal of Child Psychology and Psychiatry*, 45, 2–40.
- Wagner, R., & Ridgewell, C. (2009). A large-scale study of specific reading comprehension disability. *Perspectives on Language and Literacy*, 35, 27–31.
- Wayman, M. M., Wallace, T., Wiley, H. I., Ticha, R., & Espin, C. A. (2007). Literature synthesis on curriculum-based measurement in reading. *The Journal of Special Education*, 41, 85–120.
- Williams, T., Rosin, M., & Hirst, M. W. (2011). Gaining ground in the middle grades. *Education Outlook*, 1, 1–5.
- Wolf, M., & Bowers, P. G. (1999). The double-deficit hypothesis for the developmental dyslexias. *Journal of Educational Psychology*, 91, 415–438.

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