

# SCIENCE OF LEARNING: READING

RESEARCH PROFESSIONAL PAPER

SCIENCE-BASED  
ELEMENTS OF EFFECTIVE  
EARLY LITERACY  
PROGRAMS



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## INTRODUCTION

The most effective early-grade teachers understand that “reading is a complex developmental challenge that [is] intertwined with many other developmental accomplishments: attention, memory, language, and motivation” (Snow, Burns, & Griffin, 1998, p. 2). In addition to these intertwined factors, at its essence, learning to read involves knowing the alphabet, being able to decode, recognizing words accurately and fluently, comprehending the ideas represented in text, and more. For many, learning to read can be tough work.

Furthermore, these teachers know that the core of a strong early literacy block is instruction on the foundational skills upon which students’ development as readers and writers is built (Foorman et al., 2016; Gersten et al., 2007; National Institute of Child Health and Human Development [NICHD], 2000; Snow, Burns, & Griffin, 1998). Depending on the grade level and students’ needs, these skills include phonemic awareness, phonics, fluency (reading smoothly and accurately), vocabulary, and comprehension.

This paper describes the essential elements that should be implemented in a structured early literacy program—elements that have proven effective across decades of research.

## READING FRAMEWORK

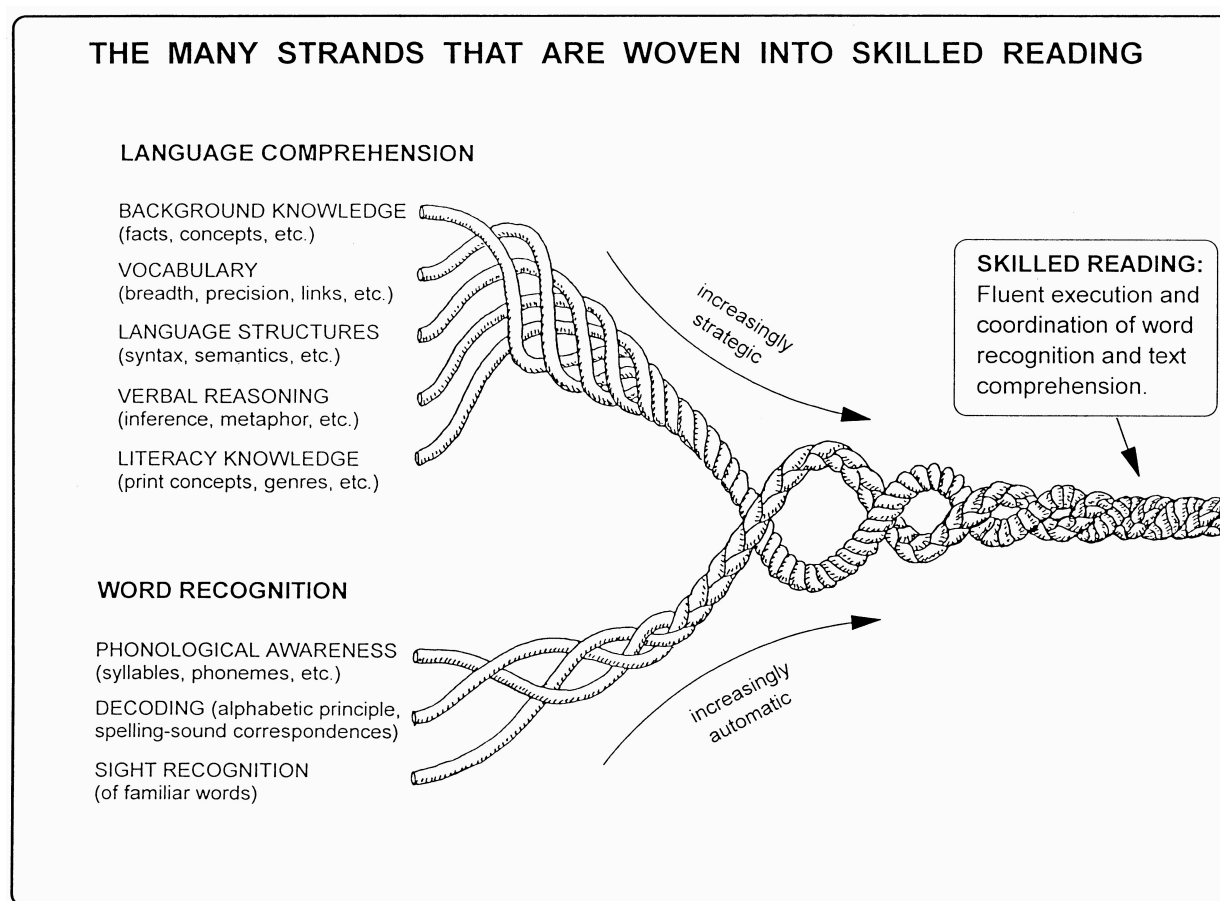
The Simple View of Reading, a prominent theory of reading development, contends that students become readers when they can marshal the skills to decode words while simultaneously drawing on their knowledge of language for reading comprehension (Baker et al., 2017; Gough & Tunmer, 1986; Hoover & Gough, 1990). Knowledge of language includes more than vocabulary and simple sentence construction; it also includes students’ knowledge of language structures, print concepts, and verbal reasoning skills (Scarborough, 2001). Reading with comprehension occurs when children can convert the meaning represented by words in print to a meaning that they can readily understand. Thus, children successfully learning foundational literacy skills discover how print maps onto their existing spoken language; gradually, they master these foundational skills to move beyond this simple transaction and bring higher levels of language as well as thinking skills, such as inferring and critiquing, to their reading.

Careful planning for the literacy block is essential because it is up to teachers to provide the environment, tools, motivation, and opportunities to help children do this cognitive “mapping.” There is a finite amount of time (commonly 60–120 minutes) for the daily literacy block, and although that may seem boundless, teachers recognize the challenges of allocating the time carefully so that the instruction they offer and the activities they provide meet the needs of all their students. Teachers can expect students in their classrooms to differ along many dimensions (see Afflerbach, 2016, for discussion of differences), but they ought to

expect that virtually all students will respond to research-based instruction and learn to read (McFarland et al., 2019).

Further, in addition to planning instruction and independent practice activities, teachers must help students understand that they themselves have the capacity to become successful readers (Sisk et al., 2018), that is, to draw on their knowledge of language and the world around them to bring meaning to print.

**FIGURE 1. THE READING ROPE (Scarborough, 2001)**



The image, used with permission from the Publisher, originally appeared in the following publication: Scarborough, H. S. (2001). Connecting early language and literacy to later reading (dis)abilities: Evidence, theory, and practice. In S. Neuman & D. Dickinson (Eds.), *Handbook of early literacy research* (Vol. 1, pp. 97–110). Guilford Press.

## EVIDENCE-BASED APPROACH

The goal of reading and writing instruction in the early grades is to enable students to read different kinds of texts quickly and easily and to express themselves clearly in writing. Teachers' instruction should be aligned to a scope and sequence that reflects how students acquire new skills. Lesson plans should reflect the diversity of students in the class and include what research has documented as the best practices. The [What Works Clearinghouse Practice Guides](#) can be invaluable in meeting this goal. Panels of researchers and teachers create the Guides by reviewing research to develop recommendations for best practices. The Guides also present "roadblocks" to implementing the recommendations, along with suggested ways to overcome the roadblocks.

Reading and writing instruction should be delivered explicitly, with language and examples that are appropriate for students' ages, vocabularies, attention spans, and needs, and instruction must be accompanied by meaningful opportunities for practicing new skills. This combination of explicit instruction and appropriate practice activities will have significant, positive effects for beginning readers and writers, even those considered at risk for later struggles (Fien et al., 2015). Extended blocks of time with differentiated instruction have been found to yield strong literacy achievement for most students (Al Otaiba et al., 2009).

## PHONEMIC AWARENESS INSTRUCTION

High-quality instruction in the early grades focuses on helping students understand the role that phonemic awareness plays in learning to read and write. Phonemic awareness refers to the connections between spoken language and literacy, that is, that learning to read and write involves attending to and analyzing the structure of what is said and heard so that utterances can be broken into language, then into sequences of syllables, and then into phonemes within the syllables (NICHD, 2000; Snow, Burns, & Griffin, 1998).

### EXAMPLES OF BEST PRACTICES FOR PHONEMIC AWARENESS INSTRUCTION:

- **Clapping to show distinct parts of sentences and words**—teachers model the distinct *words* in a sentence, then the *syllables* in the word, then the distinct *phonemes*; as students understand the concept of smaller and smaller parts, they clap themselves.
- **Sorting pictures by isolating sounds**—students can practice isolating the beginning or ending sounds represented by the name of the object shown in the picture (e.g., pictures of objects with names that begin with /m/ or end with /t/) (Foorman et al., 2016).

## PHONICS INSTRUCTION

The next step for students is to learn phonics or the actual letter-sound correspondences. As these understandings fall into place, students begin to decode. Initially, they may recognize familiar words on sight, but gradually they should apply what they know about letter-sound correspondences to decode words as they read and to encode words as they write (see Foorman et al., 2016, for a review of research not covered in the NRP report). Thus, in addition to learning letter-sound patterns, beginning readers must become fluent in decoding—the process of segmenting letter-sound patterns within words and blending them back together to access that word in their lexicon.

Strong teachers teach these skills explicitly with detailed explanations, modeling, and practice (Strickland, 2011). In these ways, teachers demonstrate the utility of the sophisticated concepts and skills students are working to master. Students should also be encouraged to try the skills out themselves by reading simple text or beginning to write on their own. This mixing of explicit instruction and practice activities strengthens students' understanding and gives them confidence as beginning literacy users. Students can also practice phonics skills

by taking dictation from teachers; the resulting products give teachers valuable informal data about students' understanding of letter-sound correspondences and of letter formation.

### EXAMPLES OF BEST PRACTICES FOR PHONICS INSTRUCTION:

- **Word-building activities**—students manipulate magnetic letters or word tiles to create words they recognize and can pronounce.
- **Word-changing activities**—using magnetic letters or word tiles, students transform simple words, for example, by adding the letter *e* to the end, inserting a consonant into simple CVC words, or removing vowels or consonants to create new words.
- **Composing on paper or computer**—students can use the same knowledge and skills in their beginning writing efforts (Foorman et al., 2016).

## FLUENCY INSTRUCTION

Practice in reading simple texts and in reading their own writing contributes to students' development of fluency, that is, the ability to read smoothly with accuracy and expression. When students' word identification becomes fast and accurate, they have freed up some "cognitive space" to draw on their broader knowledge of language and to comprehend what they are reading (Baker et al., 2017; Hoover & Gough, 1990).

Teachers model fluent reading when they read out loud to students, especially as they pause for punctuation or change their voice to show expressiveness. Teachers also model prosody, a component of fluency that is most prominent in reading poetry with inflection and rhythm. *Prosody* also refers to the ways in which tone of voice and inflection convey meaning in oral language—for example, the way one expresses sarcasm or irony. Teachers demonstrate prosody in their oral reading and can explicitly explain what they are doing as they read by asking how the change in inflection changes the meaning implied by the words on the page.

As teachers help students to become fluent readers, they need to reassure them that fluency means reading with comprehension, not merely saying the words as quickly as possible. Teachers model this distinction in their oral reading by pausing to question the meaning of words, the implications of word choice, or other aspects of the texts they are reading.

### EXAMPLES OF BEST PRACTICES FOR FLUENCY INSTRUCTION:

- **Modeled reading**—hearing teachers read connected text and poetry is one of the best ways for students to learn how fluent reading sounds.
- **Oral reading**
  - Choral reading—a group of students read together.
  - Echo (or alternated) reading—individual students practice oral reading with a more experienced reader.
- **Digital software lets students hear examples of fluent reading or facilitates fluency practice** (Foorman et al., 2016).

## VOCABULARY INSTRUCTION

From the very beginning, high-quality early literacy instruction must also include instruction and practice on vocabulary (Beck, McKeown, & Kucan, 2013; Cunningham & Stanovich, 1997; Foorman et al., 2016). The extent of students' vocabularies varies widely when they enter school, often reflecting variety in home environments and prior experiences, such as differences between the language of home and of school or preschool attendance (Golinkoff et al., 2018; Hart & Risley, 1995; Kieffer & Stahl, 2016). Teachers' everyday conversations with students can minimize these differences and expand students' oral vocabularies and concepts, in addition to their efforts to teach students academic language skills such as how to talk about books and about their own reading and writing (Foorman et al., 2016; Shanahan et al., 2010). Students' vocabularies expand from repeated encounters with new words, both in the literacy block and in content-area instruction (Connor & Morrison, 2012); vocabularies also grow from listening, reading, and talking to others.

### EXAMPLES OF BEST PRACTICES FOR VOCABULARY INSTRUCTION:

- **Teaching language for discussing books**—teachers can model and explain the vocabulary used to discuss narrative and informational texts, including organizing and then discussing the actions that take place in a story shared during oral reading time.
- **Teaching academic vocabulary**—students may not understand the different technical meanings for words used in informational texts or content-area books; for example, a scientist can *investigate* animal habitats and students can themselves *investigate* different mathematical relationships.
- **Deepening students' knowledge of words used**—teachers can help students make connections between new words and words they already know and can model the different contexts in which new words can be used (Foorman et al., 2016).



## COMPREHENSION INSTRUCTION

Comprehension is the ultimate goal of learning to read, and even beginning readers benefit from instruction that introduces them to a variety of strategies to help them understand different kinds of texts and their text structures (Duke, 2000; Shanahan et al., 2010).

Part of beginning comprehension instruction is teacher “externalizing” or modeling the comprehension strategies mature readers use automatically. The daily read-aloud period is an ideal means for this instruction—so long as teachers remember that merely reading aloud isn’t enough. Students need to be actively involved in asking and answering questions, making predictions, or explaining characters’ motivations or other actions in what they are hearing (Duke & Pearson, 2002; Reutzel et al., 2008; Shanahan et al., 2010). Researchers have found positive relationships between students’ reading growth and the extent to which they have engaged in “analytic talk” during the back-and-forth with teachers during read alouds (McGee & Schickendanz, 2007). This makes sense because the listening comprehension of young learners far surpasses their emerging reading comprehension skills.

Of course, this kind of instruction is most effective when teachers have access to high-quality children’s literature in a variety of genres and representing different cultural backgrounds and experiences. It is especially important that students experience high-quality informational books in addition to narrative literature representing different cultural backgrounds and experiences (Duke, 2000).

One of the great advantages of introducing students to reading comprehension skills by giving them opportunities to read on their own in books at the right level is that the experience reinforces that the students themselves do indeed have the capacity to become successful readers (Sisk et al., 2018). Empirical studies have demonstrated that children’s independent reading provides a unique mechanism to increase reading fluency, academic vocabulary (Cunningham, 2005), and general world knowledge (Cunningham & Stanovich, 1998; Stanovich & Cunningham, 1993).

### EXAMPLES OF BEST PRACTICES FOR COMPREHENSION INSTRUCTION:

- **Using text structure**—teachers can introduce students to the “clue words” used show the structure of different types of texts; for example, the clue words *both*, *alike*, and *different* are often found in compare and contrast texts.
- **Engaging students in discussion**—during oral read alouds, teachers can periodically ask students to summarize what has happened and to predict what will happen. Teachers should also ask higher-level questions, such as those addressing the motivations for characters’ actions.
- **Careful selection of texts**—rich narratives with clear plots and character development and informational texts that are accurate and well structured make comprehension instruction easier (Shanahan et al., 2010).

## WRITING INSTRUCTION

Most young students will—if given opportunities—become writers. Initial efforts may be part drawing and part writing, with words spelled as students “hear” them while subvocalizing what they want to say. These early efforts also demonstrate young learners’ understanding of orthography and syntax, for example, that writing flows from left to right across a page (Gambrell et al., 2007; Graham et al., 2012). Gradually, students’ writing becomes more complex and expressive, especially if students receive explicit instruction on the writing process, that is, the recursive steps a writer uses to compose text. The steps in the writing process include initial planning, drafting, sharing with the teacher or peers to get feedback, revising per the feedback, editing for clarity and mechanics, and evaluating the final written product (Graham et al., 2012). As students learn to evaluate their own and others’ writing, they look for clarity of expression, thoroughness of ideas, and other features of good writing.

Ideally, many written products will be “published” on bulletin boards, on class blogs or in magazines, or in some other way that demonstrates to the writer and other students the value teachers place in this activity as part of the literacy block.

Students need to write each day and to write for various purposes, for different audiences, and in many different genres (Berninger et al., 2006; Graham et al., 2012); writing as part of content area is also valuable. Graham et al. (2012) point out the value of word processing as a tool to make it easier for students to engage in the writing process; however, teachers need to be careful in selecting software that is supportive of young writers and is easy to use.

As with reading, explicit writing instruction that both draws on and builds students’ understanding of language will be most effective. Students benefit from instruction on handwriting, spelling, sentence structure, grammar, and other skills, but teachers also need to model writing for their students and point out the features of good writing during read alouds and other instructional interactions (Graham et al., 2012). For example, pointing out how dialogue in a story is punctuated reinforces explicit instruction on use of quotation marks in writing conversations.

### EXAMPLES OF BEST PRACTICES FOR WRITING INSTRUCTION:

- **Learning the fundamentals of writing—kindergarten students may need instruction on basics like holding a pencil and forming letters correctly; many young students will need instruction on the basics of word processing, such as keyboarding and using editing features.**
- **Using exemplary texts—simple texts that teachers have shared with students during oral reading can be used as examples or “frames” for writing practice, with students changing the story by providing their own ideas for key details, such as the setting or names of the main characters (Graham et al., 2012).**

## EXPLICIT INSTRUCTION ON LANGUAGE

One of the important aspects of early literacy instruction can be thought of as instruction on how language works, that is, instruction that gives students the tools to analyze and produce language. If we accept that successful reading depends on students' ability to decode and access their knowledge about language, then it makes sense to provide them with insight into the various linguistic components that give language order as well as richness, depth, and complexity.

- **Orthography** refers to the patterns and conventions (the spelling system) of a language. Orthographic knowledge is developed as students learn these conventions, such as letters that cannot be used at the end of words or cannot be doubled or the fact that most syllables in English have at least one vowel (Cunningham, 2006). Teaching orthography also includes teaching students to recognize different types of syllables, such as those controlled by an *r* or the VCVe type as in *cake*. As beginning readers come to recognize written syllable patterns, they are better able to decode single-syllable words (*dog* vs. *dodge*) and to break words into readable chunks. Beginning writers gradually apply these understandings in their written efforts.
- As students learn **morphology**, they learn to use morphemes, or the smallest units of meaning, to help them figure out how to read and spell unfamiliar words. Because the English orthography is a morphophonemic system, students benefit from learning the meanings of these segments within words. Prefixes, roots, base words, and suffixes are all examples of morphemes; their spelling and meaning are usually consistent, but they may be pronounced differently depending on the words in which they are used (e.g., *photo* vs. *photography* vs. *photogenic*).
- **Syntax** refers to how words are usually ordered in sentences or clauses to communicate meaning (e.g., nouns or pronouns followed by verbs, with modifiers as needed). Parts of speech, the usual conventions of language, and the structures of different sentence types are included in the study of syntax. Most of the material young students will read will have relatively straightforward syntactical structures, with phrases and clauses used in ways that support comprehension. Students who are learning to read and write in a second language benefit from additional support and explanations in mastering English syntax (Cummins, 2016).

- **Semantics** refers to the meanings of single words, phrases, and sentences. Semantics relates to vocabulary instruction but extends to the directly stated or implied meaning of phrases, sentences, and paragraphs. The term also refers to the understanding of text organization (e.g., a poem vs. a story vs. an informational piece all on the same topic). Deepening students' understanding of semantics enhances their ability to draw on their knowledge of language as they work to comprehend what they read.

### EXAMPLES OF BEST PRACTICES FOR INSTRUCTION ON LANGUAGE:

- **Taking advantage of other instructional moments—teachers who understand the structure of language integrate this information into other instruction, for example, showing how the prefix *un-* can be used to create the opposite of words such as *happy* or *locked* but that words like *sad* and *open* can also be used and have the same meaning (e.g., *unhappy* is the same as *sad*, *unlocked* is the same as *open*).**
- **Helpful ways to remember fine points of language—teachers encourage students to remember these aspects of language when they give them tricks to remember them, for example, when morphemes are added to words to create new words, the new words are different and can be thought of as “cousins” from the same family (Adams, 2010/2011).**

## KNOWLEDGE BUILDING

The Simple View of Reading emphasizes that comprehension depends on readers' ability to decode and their knowledge of language—their vocabulary and their understanding of the different aspects of language like orthography and syntax. Of course, understanding anything more than the simplest texts (e.g., a STOP sign) requires mastery of numerous comprehension strategies as well. However, research has shown that there is an even stronger influence on readers' comprehension: their background or "domain" knowledge (Adams, 2010/2011; Neuman, 2019; Wexler, 2019). Simply put, the more readers know about a topic, the easier it will be for them to comprehend a text written about this topic. Reading with comprehension in turn expands readers' background knowledge further and adds to their vocabularies (Cunningham & Stanovich, 1991).

Teachers of young children have many opportunities to expand students' background knowledge. Content-area instruction in science and social studies provides obvious opportunities for expanding students' knowledge about these subjects; teachers can use this instruction to help students connect what they already know to new knowledge and to refine their ways of talking about these subjects (i.e., academic vocabulary). If teachers hold morning "message time," they can use this period to talk about topics like the weather, national holidays, and even interesting, relevant items in the news. Asking students to share what they know about these topics contributes to knowledge building as well, and gentle correction of misinformation is perfectly acceptable.

What teachers read to students and what students read themselves during the literacy block should also expand students' knowledge. For example, the book *A Snowy Day* (Keats, 1962) would encourage students to activate different stores of knowledge when read during shared reading in Miami or in Minneapolis. This valuable experience can be even stronger if teachers next read an informational book about snow. Adams (2010/2011) suggests that in assembling a classroom library, teachers should ensure that "in every subject and in every class . . . each text bootstraps the language and knowledge that will be needed for the next [book]" (p. 10).

### EXAMPLES OF BEST PRACTICES FOR BUILDING KNOWLEDGE:

- **Big ideas**—start planning with the ideas/facts/processes students need to know.
- **Word knowledge**—identify and then teach necessary vocabulary.
- **Multiple genres**—use narratives, narrative nonfiction, and informational texts.
- **Review**—review often and in different ways with questions that move students beyond rote recall and literal comprehension.
- **Language engagement**—encourage students to talk about what they are learning (Neuman, 2019).

# MEETING THE NEEDS OF ALL STUDENTS IN DIVERSE CLASSROOMS

In most districts, the student population is diverse: many students may be just learning English, some may have learning disabilities, and some may have been diagnosed as dyslexic. Sometimes, students are clearly struggling to make sense of beginning reading instruction, but there may even be students who read above the expectations for their grade level. Teachers have the responsibility of teaching all these students, that is, to meet the students “where they are” and provide them with appropriate instruction and practice activities. Teaching in diverse classes is not easy, and teachers often need support to meet the goals they set for themselves and their students. Yet diversity reflects the reality of many schools nationwide, and it adds to the richness of the learning experience (Steele & Cohn-Vargas, 2013).

## ENGLISH LEARNERS (ELs)

Regardless of the range of languages in a classroom, it is up to teachers to provide an environment that allows all young learners to build on the knowledge of language they bring with them to school and to increase that knowledge in a way that builds literacy skills.

Screening data can help teachers plan appropriate instruction. It is especially important that they have a sense of students’ understanding of fundamental skills such as phonological processing, letter names and sounds, and concepts of print. It is also helpful for teachers to know if students have begun to read in their native language and to know the extent to which that language differs from English. For example, young learners who have started to read in a language, such as Spanish or Turkish, in which there is a precise mapping of the sounds in speech to the printed letters will initially find the mapping of the 44 sounds in English to the 26 letters of the alphabet difficult (Cirino et al., 2007; Gersten et al., 2007).

If screening or other assessment shows that ELs may be at risk for reading failure, intensive interventions should be provided quickly by trained intervention teachers. These interventions should focus on skills like phonemic awareness and phonics that are the foundation of learning to read (Vaughn et al., 2006). Research has shown that providing intensive interventions has lasting, positive effects, essentially narrowing the possibility that students will fail (Gersten et al., 2007; Vaughn et al., 2006). There are numerous high-quality, computer-driven programs that provide practice and support to ELs, for example, by giving them opportunities to listen to fluent English reading and to learn the meaning of words that are not in their lexicon.

However, interventions alone will not provide the foundation for ELs’ reading success. High-quality Tier 1 instruction that seeks to build all students’ background knowledge, increase their vocabulary, and build academic vocabulary or the so-called “language of school” are also highly beneficial (Dutro & Kinsella, 2010; Gersten et al., 2007).

## STUDENTS WITH DISABILITIES (SWD) AND STUDENTS WITH DYSLLEXIA

Early and frequent screening of students in kindergarten to Grade 3 provides the first means of identifying students with disabilities and students with dyslexia (Gersten et al., 2008). Results from screening tests may suggest that more focused diagnostic testing is advisable to pinpoint the causes of students’ potential struggles. Data from such testing that indicates students are at risk for reading failure should set into motion development of a Response to Intervention (RTI) plan and, if needed, further evaluation and the development of an individualized education program (IEP). To maximize success for these students, classroom teachers and specialists need to work together to ensure that the plan is followed and the interventions are successful.

Students’ RTI plans and IEPs most likely provide guidance for the Tier 1 instruction. A structured literacy block offers many opportunities for students to experience read alouds, share literacy experiences with peers, and independently practice the skills they learned. Teachers, however, need to be alert to signs that students are experiencing difficulty, for example, difficulty decoding, poor spelling and handwriting, and difficulty with memorization tasks (Wolf, 2007). Moreover, students who struggle with reading may lack the “reading stamina” needed during a literacy block that requires independent work in addition to working with teachers and students. Students with reading difficulties need extra practice, extra time, and books aligned with their proficiency that engage their interests. Time in the Tier 1 literacy block reinforces students’ sense of belonging in school, even if they spend some of their time with an interventionist. Steele and Cohn-Vargas (2013) point out that even young learners often recognize that they are falling behind and can feel disenfranchised; it is up to teachers to ensure that the classroom is “identity safe” for all students, even SWDs and ELs.

## STRUCTURING THE LITERACY BLOCK

The most productive literacy blocks give students opportunities to work with their teacher in both large and small groups, to work with small groups of peers, and to work independently. Research findings on early literacy development strongly recommend an extended period for instruction—at least 90 minutes. There should be limited interruptions, and all students should have opportunities to engage in different kinds of reading and writing activities (NICHD, 2000; Shaywitz et al., 1999). The actual number of minutes in a school's literacy block and the needs of students will determine how teachers divide up the time devoted to reading and writing, yet it is essential that the following activities be included:

- **Explicit instruction and practice on foundational reading skills such as recognizing and manipulating word parts presented orally (phonemic awareness), understanding letter-sound relationships (phonics), blending letter-sound patterns to produce words (decoding), or understanding common spelling patterns (encoding)**
- **Targeted, whole-class reading or writing instruction in a teacher-led lesson as a precursor to the longer period of independent or small-group work; during the minilesson, the teacher (1) ties new content or skills to what has been learned previously; (2) states the teaching point that will be presented (e.g., use of dialogue in narrative writing); (3) models or explains the teaching point, usually with some textual support; (4) asks students to practice the teaching point with partners; and (5) restates the focus of the minilesson; the teacher then sends students to their independent and small-group work.**
- **Small-group instruction, during which teachers meet with small groups and other students work independently, work with partners, work in centers, or otherwise practice their developing skills**
  - Print or digital practice activities are available.
  - Center work reinforces what students have been learning.
  - Teachers check in with and debrief to ensure that students are maximizing their time.
- **A variety of interactive and independent reading and writing activities, for example:**
  - Read alouds, during which teachers model reading and engage students actively in asking and answering questions
  - Instruction to build vocabulary and background knowledge
  - Writing independently or with a partner
  - Engaging in shared reading with a partner
  - Reading independently in trade books (~15–20 minutes) with teachers monitoring the reading<sup>1</sup>

<sup>1</sup> Researchers Bryan, Fawson, and Reutzel (2003) found that even short check-in conversations motivate students to read independently. These conversations do not even have to happen every day to keep students accountable for selecting appropriate books and keeping track of their progress.

Within these parameters, it is essential that students at each level receive focused, explicit instruction on foundational skills (Shaywitz et al., 1999). The following guidelines are advisable and reflect the development of reading over the early grades:

TABLE 1. Advised Explicit Instruction on Foundational Skills for Grades K–2: 90-Minute Literacy Block

Grade	Print Concepts	Phonology & Phonics	Comprehension	Practice with Books at an Appropriate Level
K	15 minutes	30 minutes	25 minutes	20 minutes
1st	10 minutes	30 minutes	25 minutes	25 minutes
2nd	5 minutes	30 minutes	30 minutes	25 minutes

Regardless of students’ needs, the literacy block is a busy time for teachers and students alike. It can flow most smoothly when teachers help students understand their responsibilities in moving from whole-class instruction to small groups to independent work. The advantages of such a dynamic instructional structure include building community through whole-class work, offering instruction in focused small-group interactions, prioritizing students’ time practicing skills alone and with peers, and alternating times when students sit and listen with times when they are more active. It is important that students come to understand—right from the beginning—that they are, in fact, active participants in the learning process.

Much of the support for this dynamic, active model of instruction comes from work by researchers whose focus has been young learners in Tier 1 classrooms who either seem to be at risk for reading difficulties or who are actually falling behind grade-level expectations (Al Otaiba et al., 2011; Connor & Morrison, 2012; Fisk et al., 2016). Explicit, high-quality Tier 1 instruction provides differentiated, culturally responsive core academic instruction and also helps students learn the culture, norms, and “languages” of school. When well implemented, Tier 1 instruction should ensure positive outcomes for a minimum of 80 percent of all students (for an overview, see <http://www.rtinetwork.org/essential/tieredinstruction/tier1>).

## WHAT TEACHERS NEED: MATERIALS, ASSESSMENTS, AND DATA

The responsibility of providing beginning readers and writers with comprehensive Tier 1 instruction that maximizes students' learning opportunities falls to classroom teachers—and of course to the professional developers, coaches, and administrators who support them. Valencia, Wixson, and Pearson (2014) captured this responsibility nicely by saying:

*Tasks matter*—both what we ask students to do and the texts to which they apply these tasks. *Scaffolding matters*—how teachers support and guide students throughout the task and how peers collaborate in all aspects of the activity. (p. 273, italics added)

### MATERIALS

One of the key words in the definition of Tier 1 instruction is *differentiated*, reflecting the fact that in every class, students present a virtual mosaic of levels, accomplishments, and needs. Although it is important that teachers convene their entire class and build a sense of community, it is equally important that they tailor instruction and practice activities to meet individual students' needs. Data help teachers customize their instruction, and ample resources are needed to support this differentiation.

The term *print-rich environment* has become almost a cliché, but rethinking this term in the age of laptop computers, educational software, and other technology is a valuable exercise. Even with technology, charts and displays of students' writing are still valuable parts of the environment, and classroom libraries still need to be full of books representing different genres, depicting female and male characters from different backgrounds engaged in a variety of activities, and written at different levels of difficulty. Having print or digital “big book” versions of some of the books allows teachers to share books with students and to model oral reading fluency and various comprehension strategies.

Research has shown the positive benefits of students engaging in independent reading for 15–20 minutes of their literacy block (Foorman et al., 2016; Shanahan et al., 2010). Reading connected prose—even the minimal prose of beginning picture books—gives students different experiences from explicit instruction focused on reading isolated words or phrases.

Students should have access to both informational and literary books for independent reading. Although it is important that these books be authentic and be truly engaging, students who are just learning to read benefit most from books that reinforce their emerging decoding abilities, that is, books that they can decode independently (Compton et al., 2005).

Independent reading helps students build accuracy, fluency, and comprehension; it also helps students develop “reading stamina,” that is, their ability to read on their own for extended periods of time without giving in to distractions or distracting others. Students are most likely to engage in independent reading when classrooms provide not just ample books but also comfortable areas for them to sit and read.

Careful selection of materials is essential. Twenty years ago, the National Reading Panel (NICHD, 2000) warned that as teachers gather materials for their literacy block, they might succumb to the temptation of adding one new program after another without thinking about the effectiveness of the additions for their students or the ways in which the additions align to instructional goals. This warning may be even more important as educators have access to interactive, computer- or tablet-delivered programs that can make the planning and management of extended literacy blocks more successful for all students. Conversely, teachers also have access to often-unvetted, web-based lesson plans and other resources.

### ASSESSMENTS AND USABLE DATA

Experienced teachers are always assessing their students' progress, often without realizing that their observations of students working in groups or on their own and their analysis and use of what they see constitutes a valid form of assessment. However, this is only one form of assessment, and teachers who want to maximize their students' learning need additional sources of data about how their students are doing (Al Otaiba et al., 2011, 2014; Shepard et al., 2005). The right kinds of data inform teachers about the instruction that will most benefit their students; identify students who may need additional, out-of-classroom help; and give thoughtful teachers feedback on how they are doing in meeting students' needs.



There is wide consensus about the importance of screening tests as students enter school and at the beginning and middle of kindergarten to Grade 2 (Gersten et al., 2008). Early and frequent screening, using instruments that are efficient, reliable, and valid can provide early warnings of students who might be at risk for reading failure, learning disabilities, or dyslexia (Washington et al., 2010). Although schools should use the highest-quality screening tools available, screening tools can be imperfect; anyone interpreting the results needs to be sensitive to cultural and language differences or situational apprehension that may be reflected in students' scores (Gersten et al., 2008). Administration of the screening test again, at least at mid-year, helps schools track students' progress, adjust instruction as needed, and provide additional services to prevent later problems.

Data that teachers can use will most likely come from two main kinds of assessments:

1. **Formative assessments** measure the process of learning and what students have learned so far.

- These are given frequently—as often as monthly—throughout the school year.

2. **Summative assessments** are used at the end point in a learning continuum, such as the end of a lesson, unit, or school year; these measure what students have learned overall.

- These are used less frequently at points in the school year indicated by the scope and sequence and at the end of the school year.

Teachers seeking to provide data-informed instruction rely specifically on two types of formative assessment:

- **Formative benchmark assessments compare students' progress so far against a determined set of standards (e.g., a scope and sequence) to help teachers track students' trajectory toward established long-term goals.**
- **Formative diagnostic assessments provide data on students' learning accomplishments (e.g., can answer literal questions about what has been read) and areas that are not as well developed (e.g., has difficulties drawing simple inferences from text).**

Although there is value in all forms of data, it can be argued that formative diagnostic assessments provide teachers the most actionable information about their students' learning by offering insight into students' understandings and misunderstandings and into gaps in their skills.

Data are essential for planning instructional groups for the literacy block: Who should be included in the groups and what should the groups be taught and asked to do? Are students ready for new concepts and skills or should teachers reteach students to ensure learning? Data help teachers differentiate instruction according to their students' learning. According to the National Reading Panel (NICHD, 2000, p. 2), students learn best in carefully constituted small groups, even more so than if taught one-on-one. Grouping should be a dynamic, flexible practice, with instruction determined by student need and students' entry into and exit from specific groups determined by their progress. Thus, teachers can provide immediate focused instruction for students who seem to be struggling or becoming at risk for failure as part of their regular Tier 1 literacy block, perhaps thereby forestalling assignment to Tier 2 or 3 intervention. Needless to say, formative diagnostic assessment data can also identify those students who would most benefit from specialized Tier 2 or 3 interventions (Al Otaiba et al., 2014; Fien et al., 2015; Gersten et al., 2008).

Formative diagnostic assessment should become part of the teaching process, for example, as teachers listen to students read orally and identify patterns or errors or as they analyze students' independent writing assignments. Many comprehensive literacy programs include digital products that track students' use and record the results for use as formative diagnostic data. Some include rubrics and other standardized tools, to help teachers evaluate students' progress in a consistent way, along with short formative diagnostic assessments that are often delivered digitally.

Equally useful as teachers try to use data to differentiate instruction are the digital dashboards that some recent reading programs provide. These allow teachers to organize and track formative diagnostic data for individuals and for whole classes (Connor, 2017) to make differentiation of instruction and grouping decisions efficient.

## PROVISIONS FOR STUDENTS' SOCIAL AND EMOTIONAL GROWTH

In addition to planning and providing high-quality instruction to all their students, teachers also need to attend to students' social and emotional needs, that is, their feelings about themselves as learners (Farrington et al., 2012) and the climate in the classroom (Kraft et al., 2016; Quay, 2017; Quay & Romero, 2015; Steele & Cohn-Vargas, 2013). Students' mindset (Dweck, 2006)—that is, how they think about themselves as learners—can play a large role in their literacy acquisition and the effort they put in to the challenges they may encounter as beginning readers and writers (Sisk et al., 2018).

When students actually take on the cognitive challenge of beginning literacy and feel the accomplishment of learning, their brains and working intelligence actually become more flexible and receptive. Motivated to take on challenges and look at mistakes as opportunities to grow, students try out the strategies their teachers have been presenting to read on their own (Dweck, 2006; Quay & Romero, 2015). Lacking this motivation, students may begin to decide that reading is simply not for them (Guthrie & Kluada, 2016).

Teachers who think deeply about the classroom social-emotional climate and the extent to which it supports all students can counter any negative feelings young learners may develop. These teachers recognize that learning always progresses at different rates but especially in classrooms as diverse as today's classrooms can be. They work to make their classrooms an environment where students know their teacher cares about them and there is both physical and emotional safety. The environment is culturally responsive, regardless of students' backgrounds or achievement levels, and differences are celebrated for their contribution to the learning community (Darling-Hammond et al., 2019). Teachers' choices of books for the classroom library and of digital programming show this celebration of differences so that students see themselves in the materials from which they learn.

Teachers' support, modeling, encouragement, and feedback build and reinforce students' sense of themselves as learners. Students come to trust that mistakes are a part of the learning process, and their efforts and genuine hard work are valued above all other behaviors. Essentially, students come to realize that they belong in school, even when it seems challenging; that their reading and writing skills will grow with time and hard work; and that they can marshal the perseverance and resiliency needed for this hard work.

As teachers implement a structured literacy program that includes different methods for student engagement, they need to be especially aware of group dynamics and their own potential hidden biases toward students who struggle. In discussing classrooms that are safe for all students, Steele and Cohn-Vargas (2013) point out that students who struggle and who spend time in "pull-out" interventions may begin to feel alienated from their peers and their peers may form cliques that exclude them. Teachers who recognize the importance of the social-emotional climate for all their students and who recognize the fragility of some students' sense of themselves as learners have the responsibility to model positive interactions among all students and to demonstrate their acceptance of all students, regardless of their language backgrounds, disabilities, or struggles as beginning readers and writers (Darling-Hammond et al., 2019).

## CONCLUSION

Thinking about learning to read and write in terms of cognitive activity means that we must think about what has to go on in students' brains. The brain is not hardwired for literacy acquisition, as it is to learn speech, but learning to read and write is an important milestone that causes neural changes in young learners' brains. Research on how individuals learn has shown that the brain is malleable during the learning process with experiences activating neural pathways that permit new, more expansive ways of thinking and acting (Cantor et al., 2019; Darling-Hammond et al., 2019; Dehaene, 2010).

Children need to read with confidence and competency in order to learn about themselves and the world. Reading is the gateway to learning in all content areas, preparing children to do well in school and in life. We are fortunate to have a scientific base and the knowledge of skilled teachers for establishing structured literacy programs. These will ensure our children will not only find out about the world but will also make it better.

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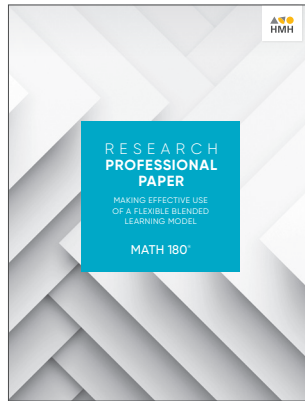
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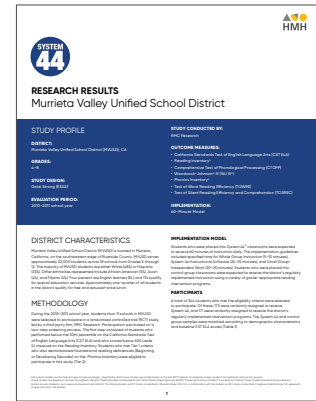
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