Colorado Department of Education
Dyslexia Handbook

COLORADO

Department of Education

About the Colorado Department of Education Dyslexia Handbook

The *Colorado Department of Education Dyslexia Handbook* is designed to provide online access to information and resources to Colorado schools and families as they support students with literacy challenges, including dyslexia. This handbook reflects a department wide commitment to ensure that students' needs are met as a result of collective responsibility and collaboration across general and special education contexts.

Throughout this handbook, "student with dyslexia" is used in lieu of "dyslexic" or "dyslexic student." The decision to use person-first language is to serve as a constant reminder that these students are more than their dyslexia (National Center on Disability and Journalism, 2017).

The *Colorado Dyslexia Handbook* is organized into downloadable and printable chapters, each reflecting a specific aspect of our focus.

Contents

Chapter 1: Introduction

In this chapter:

What is reading? It is a wonderful cultural invention that allows us to hold 'a conversation with the deceased', a way to 'listen to the dead with my eyes' (Francisco de Quevedo). By learning to read, we learn to access our knowledge of spoken language through a novel modality, one that was never anticipated by evolution: vision. Writing is a remarkably clever encryption device by which we turn spoken language into rich visual texture of marks on stone, clay or paper. Reading corresponds to the decryption of this texture. During reading acquisition, we transform some of the visual structures in our brains in order to turn them into a specialized interface between vision and language. Because reading is an extremely recent invention in evolutionary terms, and until recently concerned a small minority of humans, the human genome cannot contain any instruction for reading-specific brain circuits. Instead, we have to recycle existing brain systems for this novel use.

— Stanislas Dehaene, in Human Neuroplasticity and Education (2011)

Over the past four decades, science and education have come together to create a profound understanding of the skill we call "reading." Modern technology in the form of PET scans and functional MRIs have allowed us to understand the neurological wonder of how the brain turns marks on a page into representations of spoken language and meaning. With this science has come a greater understanding of what it means to be a "reader."

The studies of reading and readers have provided insight into what "good readers do" and what happens when the process of learning to read is impaired and becomes challenging and laborious. Our understanding of the relationship between oral language and reading has grown substantially, and although we do not have all the answers to the underlying causes of atypical reading development, we now have an ever-increasing amount of scientific knowledge about the nature of dyslexia. These efforts to comprehend how humans learn to read have expanded our understanding of effective instructional practices for all types of readers and for all types of reading. By better understanding what happens in the brains of typical and accomplished readers, we are able to recommend sound instructional methods and strategies for those who struggle with reading, which help create the neural pathways necessary for reading success.

Almost a decade ago, the Colorado Department of Education published the *Colorado Literacy Framework* (2010) as "a call to action" in addressing the literacy needs of students throughout our state. Today, we continue to recognize the three guiding principles found within the *Colorado Literacy Framework*:

- Literacy is the gateway to opportunity.
- All students can benefit from scientifically based literacy practices.

- Literacy initiatives must be continuously informed by the most rigorous and robust body of research available.

Today, more than ever, addressing the needs of Colorado students who struggle with reading, including those with dyslexia, is essential to our vision that "all children in Colorado will become educated and productive citizens."

1.1 Overview of the Structure of the *Colorado Dyslexia Handbook*

The first edition of the *Colorado Dyslexia Handbook* is designed to create a basic document structure that can be easily expanded and updated as new research and information about the science of reading and dyslexia become available. This handbook is organized into downloadable, printable sections and chapters, each reflecting a specific aspect of our focus on students with dyslexia and their parents, families, and teachers. As our work in the area of literacy expands, so will the content of this handbook. For this reason, the *Colorado Dyslexia Handbook* was created as an electronic document that can readily be adjusted to meet the needs of students, families and schools. As a living document, this handbook serves as a resource for the most current and informative research and best practices available.

It should be noted that Colorado school districts have considerable autonomy in making decisions about diagnostic tools and instructional programs. Outside of specific legislation, such as Colorado's Reading to Ensure Academic Development Act (READ Act), the Colorado Department of Education does not endorse specific interim assessments, diagnostic tools, instructional programs or materials. As a result, this handbook does not provide lists of mandated or preferred products or programs. Instead, this handbook will guide users to the best assessment and evidence-based instructional practices founded on current science and research.

Throughout the handbook, the reader will find lists of, and links to, resources provided for information purposes only. The CDE neither endorses nor recommends specific resources, with the exception of the federal Office of Special Education Programs (OSEP) or CDE guidance documents.

1.2 The Purpose of the Colorado Dyslexia Handbook

The *Colorado Dyslexia Handbook* is a resource for reliable information for educators, students, families, and community members about dyslexia, comprehensive literacy instruction, and the evidence-based practices for identification, instruction, and accommodation of students who have reading difficulties. As an informational guide, the intended purpose of this handbook is to:

- Establish a common definition and understanding of dyslexia across Colorado.
- Address best-practice and evidence-based approaches to the identification and subsequent instruction of students with dyslexia and other reading difficulties; and
- Provide parents and families with resources to support students with dyslexia at home and in the community.

In addition, this handbook can provide guidance for parents, administrators, specialists, and teachers in making the best educational and instructional decisions for Colorado students with dyslexia. It can also serve as a starting point when additional resources are needed to support students suspected of having difficulties in reading and other essential literacy skills.

1.3 The Components of a Comprehensive Literacy Program

Whether identified with dyslexia or not, all students who struggle with reading require careful consideration of their learning challenges and needs, and should receive specific, evidence-based intervention. Such interventions should be offered within the context of a comprehensive literacy program. To be effective, a comprehensive literacy program must have the essential structures in place and must include the most crucial instructional components.

The Structure

A comprehensive literacy program should be built using a multi-tiered system of supports (MTSS), which allows students access to high-quality classroom instruction followed by interventions that increase the time and intensity of instruction. The foundation of a comprehensive literacy program is universal instruction, sometimes referred to as first-best instruction. This foundational tier of instruction requires a well-prepared teacher, an adequate block of instructional time, and the effective use of evidence-based resources and instructional strategies. All students are assessed for risk, and periodic monitoring checks are used to ensure reading growth.

Students found to be at risk, as well as those making less-than-expected progress at the Universal Tier of Instruction, should be further evaluated to determine which specific areas of reading development require intervention. Based on assessment data, students receive targeted instruction, sometimes referred to as Tier II instruction. Those providing targeted instruction need to be knowledgeable in the delivery of direct, explicit, and focused reading instruction designed to address the unique needs of each student. More frequent progress monitoring of students receiving targeted instruction is essential to ensure that the intervention is properly designed to increase reading outcomes for each student.

When a student continues to demonstrate reading difficulty despite the addition of targeted intervention, the student should be considered for more-intensive instruction. Intensive instruction, or Tier III intervention, should be offered to students requiring individualized attention and more time in learning foundational reading skills.

What has been described is the **structure** of a comprehensive literacy program. The essential structural elements include the following:

- Well-prepared teachers and interventionists who are knowledgeable about the structure of the language, use effective and evidence-based instructional practices, and have ongoing access to relevant professional development.
- Adequate instructional time, which means a literacy block of at least 90 minutes and options for intervention, which can increase this instructional time by a minimum of more than half.
- Instructional resources and materials that are developmentally sequenced, that use research- and evidence-based instructional practices, and that address the essential components of literacy. These are further explained in “The Content,” the next part of this section.

- An assessment system that ensures universal screening, timely progress-monitoring, diagnostic assessment when needed, and a comprehensive system of tracking all students' reading growth.
- Knowledgeable instructional leaders who maintain a master schedule that provides for time and staff to deliver all tiers of instruction, who offer a combination of accountability and support in the delivery of evidence-based instruction, and who manage resources effectively so they can provide adequate instructional and reading materials.
- Opportunities for parents and families to participate in their student's instruction through access to practice materials, timely progress reports, and opportunities to speak with their student's teacher and share their insights into their child's learning.

The Content

In 2000, the National Reading Panel (NRP) identified five components of comprehensive literacy instruction:

- **Phonemic awareness** — an awareness of, and the ability to, manipulate the individual sounds (phonemes) in spoken words;
- **Phonics** — the study and use of sound/spelling correspondences and syllable patterns to help students read written words;
- **Fluency** — reading text with sufficient speed, accuracy and expression to support comprehension;
- **Vocabulary** — the body of words and their meanings that students must understand to comprehend text; and
- **Text comprehension** — the ability to make meaning with the use of specific skills and strategies, vocabulary, background knowledge and verbal reasoning skills.

These essential **content** components of a comprehensive literacy program can be best explained via the graphic below. *The Literacy How Reading Wheel*, developed by Dr. Margie Gillis and her team at Literacy How in Connecticut, "depicts the essential components of comprehensive literacy." The *Reading Wheel* represents an expansion of the basic five components based on an abundance of research since the National Reading Panel (NRP) first published its findings in 2000. The Literacy How model features these additions:

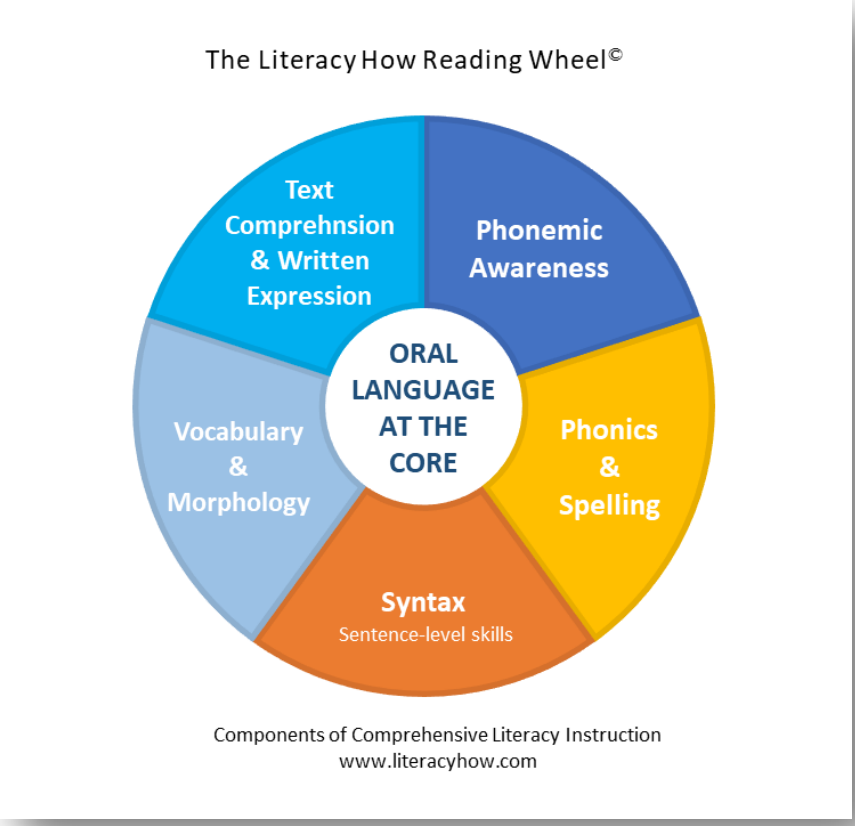
- **Oral language** — Speaking and listening are used as the core of the wheel. This represents the understanding of oral language as the "foundation" of all literacy skills. As Dr. Gillis states, "Oral language is at the heart of both listening and reading comprehension." Additonally, she reminds us that "oral language serves as a predictor for both [listening and reading comprehension]."
- **Spelling** — Spelling has been added to the phonics section as a way of reminding us "of the reciprocal nature of sounding out words (decoding) and spelling words

(encoding)." More current research has shown that "instruction that coordinates decoding and spelling maximizes students' ability to reading and spell automatically."

- **Syntax** — Syntax, the way that words are arranged to create meaningful phrases and sentences, is now included. The sentence level of language "is strategically positioned as a building block between individual words and text."
- **Written expression** — Writing has been added "due to the reciprocal relationship between writtten expression and text comprehension." Again, research provides evidence that writing about a text boosts students' comprehension of what they read.

Finally, "the Literacy How model expands the concept of **fluency** to encompass all aspects of literacy development. Fluent or automatic, performance in both discrete (e.g., word recognition) and complex (e.g., comprehension, composition) literacy skills is essential to be a proficient reader and writer."

When a comprehensive literacy program combines the necessary **structures** with the essential **content or literacy components** that must be taught, students are likely to receive instruction designed to address the needs of *all* students, including those with dyslexia.



For More Information

Computer-Based Information

The CDE P-3/Literacy Office has helpful resource documents that address "Tiers of Reading Instruction – Meeting the Needs of All Students"; "Tier I Literacy Instruction – Best First Instruction"; and "Tier II and Tier III Literacy Instruction – Prevention of Reading Difficulties."

The Literacy How website, offers additional information about *The Literacy How Reading Wheel* and resource links.

The CDE Office of Learning Supports offers guidance documents titled *What is MTSS in Colorado?*, and Definitions: MTSS and Five Essential Components both are available on the CDE Multi-Tiered Systems of Supports webpage.

The National Reading Panel's *Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction* is available on the National Institute of Child Health and Human Development website.

View Video

View the video "How the Brain Learns to Read," featuring Dr. Stanislas Dehaene.

View the video "What is a Multi-Tier System of Support (MTSS)?", featuring Colleen Riley.

The CDE Office of Learning Supports offers an "MTSS Overview Video" on the Multi-Tiered System of Supports (MTSS) webpage.

Books and Print Resources

Reading in the Brain (2010), by Stanislas Dehaene, offers a comprehensive and scientific explanation of the "science of reading."

Chapter 2: What Is Dyslexia?

In this chapter:

"Science has moved forward at a rapid pace so that we now possess the data to reliably define dyslexia ... For the student, the knowledge that he is dyslexic is empowering ... [It provides him] with self-understanding and self-awareness of what he has and what he needs to do in order to succeed."

— Sally Shaywitz, M.D., co-director of Yale Center for Dyslexia and Creativity, in testimony to the U.S. House of Representatives, Committee on Science, Space and Technology

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In this video by Understood.org Dr. Margie Gillis explains "What is Dyslexia?"

2.1 The Definition of Dyslexia

The Colorado Department of Education has elected to use the following definition of dyslexia, established by the International Dyslexia Association (2002) and adopted by the National Institute of Child Health and Human Development (Lyon, Shaywitz and Shaywitz, 2003):

> *Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.*

Moats and Dakin offer the following explanation of the key pieces of this definition in *Basic Facts About Dyslexia & Other Reading Problems* (2008):

- **Specific learning disability** is an impairment of learning ability that may affect one or more academic areas, but not others, and exists in spite of adequate intelligence and opportunity to learn. For example, a person may be good at math or mechanical problem-solving but poor at reading. *Specific learning disability* is also defined in special education laws and policies, often in

different ways by different states. (See Chapter 8 for Colorado's definition of Specific Learning Disability.)

- **Neurological in origin** means that the person's reading, language or writing problems arose from factors within that individual that have a basis in "wired-in" aptitudes for language learning and reading. However, the person's environment and experiences in life also determine how well he or she learns.
- **Accurate and fluent word recognition** is the person's ability to read single printed words accurately and quickly and to read aloud with sufficient speed to support understanding.
- **Spelling and decoding abilities** refers to the person's ability to spell accurately and to read unknown words by using phonics or letter-sound correspondences and recognizing syllable patterns and other chunks of longer words.
- **A deficit in the phonological component of language** is difficulty pronouncing, remembering or thinking about the individual speech sounds that make up words**.**
- **That is often unexpected** means that in spite of typical classroom instruction, adequate intelligence and opportunity to learn, the person struggles with reading and/or writing more than other students at the same grade, age or ability level.
- **Secondary consequences** means that students with dyslexia, because they cannot and do not read very much and are not "wired" to learn language easily, often have related problems learning the meanings of words and comprehending academic language as they progress through the grades.

(We gratefully thank the authors and the International Dyslexia Association for permission to use this detailed explanation.)

In this handbook, the term **dyslexia** will be used to represent a common but specific type of reading disorder also known as developmental dyslexia. Developmental dyslexia is a reading disorder that an individual is born with as a result of genetic, hereditary and/or neurobiological differences and subsequently develops over time. In contrast, acquired dyslexia is the loss of existing reading skills as a result of a traumatic brain injury such as head trauma or stroke. Developmental dyslexia, or dyslexia, is a lifelong condition regardless of the age at which it is identified or diagnosed. Simply put, dyslexia is a brain-based learning disability that specifically impairs a person's ability to read and/or spell.

Brain imaging studies have shown brain differences between people with and without dyslexia. These differences occur in areas of the brain involved with key language and reading skills. For individuals with dyslexia, language areas of the brain used for reading may not function in the same ways as they do in individuals without dyslexia.

The National Center on Improving Literacy's infographic *What is Dyslexia?* and the companion literacy brief, *Defining Dyslexia*, can be viewed at National Center on Improving, Defining Dyslexia web page.

Dyslexia is the most commonly diagnosed reading disorder. Dyslexia is also found on a continuum of severity, ranging from mild characteristics of dyslexia to profound difficulty with reading and writing. In its most severe

forms, it is a learning disability. In its mildest form, it may be a source of puzzlement, frustration or mild inconvenience. As a result of this span of difficulty, the exact prevalence of dyslexia has yet to be definitively determined. It has been suggested that perhaps as many as 15% to 20% of the population as a whole have some of the symptoms of dyslexia (IDA, 2017). A recent white paper indicates that the prevalence has historically been reported as affecting 5% to 17% of children (Petscher, Fien, Stanley, Gearin, Gaab, Fletcher & Johnson, 2019). In a recent video interview with Dr. Nadine Gaab, the range of 8% to 12% was reported (Reading Rockets & NCIL, 2019).

The commonly accepted features of dyslexia include:

- **Difficulty with phonological processing,** which impacts one's ability to effectively decode letters into blended sounds to form words. A fundamental phonological processing problem may block access to more advanced aspects of reading, such as word identification and comprehension.
- **Slow, inaccurate or labored oral reading,** i.e., lack of reading fluency.
- **Difficulty with spelling,** as demonstrated in an inability to efficiently write the letters comprising words from memory; increased time needed to spell words; and spelling errors that may be apparent.
- **Difficulty with rapid naming** may be evident, making it difficult to quickly retrieve the speech sounds and the correct letter-order patterns required to be an efficient reader or speller.

Common associated features include:

- Difficulty acquiring and using oral and written language;
- Difficulty learning and retaining multisyllabic vocabulary required for mastery of academic content; and
- Limited reading comprehension due to weak decoding, word recognition and fluency skills.

2.2 Common Myths About Dyslexia

To further understand what dyslexia is, it may be helpful to debunk some common myths about dyslexia, understand what dyslexia is not, and consider typical features of dyslexia and impaired reading, spelling or language usage over multiple school years and into adulthood.

Neurological research shows that dyslexia is a real condition and that scientists have been able to locate unique identifiers, not only in different areas of the brain and how they function, but also in the variation of important chemicals in the brain and in the way brain cells communicate with one another. These advances in neuroscience also show that, with appropriate reading interventions, the unique identifiers in the brain can be altered to resemble the reading patterns seen in the brain of a person who does not have dyslexia. In addition, neuroscience is showing new evidence that aligns with earlier work on the importance and possibility of earlier identification (even before a child is able to read) in individuals with a high risk for developing dyslexia. High risk factors include a family history of dyslexia or a weakness in critical pre-reading skills (e.g., letter identification, letter–sound knowledge, phonological awareness, and rapid naming). See Chapter 3 for more information about early identification of reading risk.

More than ever, the causes of dyslexia are well known, but some myths still persist. Dyslexia is related to reading difficulties, not difficulties that arise from intellectual functioning or seeing print in reverse. The following are commonly held myths regarding dyslexia and the students who are at risk or are identified as having dyslexia.

Topic	Myth	Truth
Reversals	**Myth:** Dyslexia is a visual problem. Students with dyslexia see and write letters and words backward.	**Truth:** Dyslexia is not primarily a visual problem; it is a language-based problem. Many children reverse their letters when learning to read and write. Reversing letters is not a sure sign of dyslexia, and not all students with dyslexia reverse letters.
School Success	**Myth:** If you perform well in school, you must not have dyslexia.	**Truth:** Some students with dyslexia perform well in school. These students work hard, are motivated and have the accommodations necessary to show their knowledge.
Intelligence	**Myth:** Smart students cannot have dyslexia; students with dyslexia cannot be very smart.	**Truth:** Dyslexia is defined by an unexpected difficulty in learning to read. Said another way, dyslexia is a paradox — the same person who struggles to read accurately and/or quickly may be very intelligent.
Eligibility	**Myth:** If a student has dyslexia, he or she will automatically receive special education supports through an Individual Education Program (IEP). An IEP is the only way to get the appropriate instruction and accommodations needed.	**Truth:** Dyslexia comes in many degrees, from mild to severe. Some children with characteristics of dyslexia meet the eligibility requirements for special education in the Specific Learning Disability category, and some do not. All students should receive appropriate services through a comprehensive multi-tiered system of supports (MTSS). Students who do not respond to these interventions may be eligible to receive interventions through special education. Students identified with characteristics of dyslexia may also be considered for potential Section 504 eligibility. (See Chapter 8 for more information.)
Short-Term Problem	**Myth:** Most students will eventually outgrow dyslexia.	**Truth:** Dyslexia, the result of a processing difference in the brain, will last a lifetime.

Topic	Myth	Truth
Reading Ability	**Myth:** Students with dyslexia cannot learn to read.	**Truth:** Most students with dyslexia learn to read, but they do so with greater effort. Many struggle with reading fluently. Frequently, reading tends to be time-consuming and laborious.
Gender	**Myth:** Only boys are affected by dyslexia, or there is a significant difference between the number of boys and girls identified with dyslexia.	**Truth:** Students of both genders can have dyslexia. The slightly higher percentage of boys being identified with dyslexia is not significant.
Comprehension	**Myth:** Students who have dyslexia have poor reading comprehension skills.	**Truth:** Students with dyslexia tend to have comprehension skills, but this can be masked by: The amount of mental effort required to decode, limiting access to the ability to think critically; and A limited amount of reading, leading to a gap in the student's vocabulary and background knowledge as compared with students who read large amounts of appropriate text.
Reading Difficulties	**Myth:** All reading difficulties can be attributed to dyslexia.	**Truth:** The hallmark of dyslexia is a word-level reading problem that is unexpected in a child who seems to have all the requisite skills (intelligence, verbal skills and motivation) that are necessary to become a reader. There are other ways students can struggle with reading: for example, students who are able to decode the words but don't understand what they are reading (hyperlexia). There are many other profiles and conditions that may impact learning to read. Dyslexia is not the only reading difficulty.

2.3 What Dyslexia Looks Like at Various Ages and Grades

"Although it is helpful to agree upon a definition … it is more important to remember that no two … [individuals with dyslexia] are exactly alike, and that the manifestations of dyslexia change over time."

Louisa Cook Moats and Karen E. Dakin (2008)

It is important to acknowledge that numerous factors — such as severity, age of initial diagnosis and treatment, responsiveness of the reading/writing problem to treatment or remediation, coexisting conditions that may occur with dyslexia, and an individual's strengths and areas of specific talent and interest, can cause dyslexia to vary considerably from one individual to another. (See Chapter 7 for more information about comorbidity and conditions that commonly coexist with dyslexia.) In addition, the observable features of dyslexia change over time, as a result of changing academic demands at the different stages of the student's education, the student's acquisition of language and literacy skills over time, his or her capacity for using compensatory strategies, and the personal strengths of the student. The following chart highlights "the possible strengths and the possible challenges typical of students with dyslexia" (Fairfax County Public Schools, 2019) during the life cycle of dyslexia.

Life Cycle of Dyslexia

We are grateful to Fairfax County Public Schools (FCPS), Fairfax, Virginia for permission to use the following copyrighted information from the FCPS online Dyslexia Handbook, *Signs of Dyslexia*, which was adapted from *Overcoming Dyslexia* (2004), by Sally Shaywitz, M.D.

Pre-K to Grade 1

Possible Strengths

- Curiosity
- A great imagination
- Creative
- Eager to embrace new ideas
- Maturity beyond their years

Possible Weakness

General

- Has a family history of reading/spelling difficulties
- Confuses left and right; delay in hand dominance
- Has trouble reciting the alphabet, numbers, days of the week or other sequences
- Has trouble learning common nursery rhymes such as "Jack and Jill"
- Has difficulty recognizing rhyming patterns (cat, bat, rat)

Speaking

- Was/is late learning to talk
- Mispronounces words by mixing up sounds (e.g., mawn lower)
- Has trouble naming letters, matching letters to sounds, or blending sounds
- Confuses names or pronunciations of letters with similar sounds (e.g., p/b; z/s; v/f; d/t)

Grade 1 to 3

Possible Strengths

- The ability to solve practical problems
- Strong listening comprehension
- Easily understands new concepts
- Large oral vocabulary for his/her age
- Enjoyment in solving puzzles
- Talent at building models

Possible Weakness

General

- Lacks fast, effortless recognition of numbers and simple math facts

Speaking

- Mispronounces words by mixing up sounds (cinnamon for synonym)
- Has difficulty breaking spoken words apart into sounds or syllables

Reading/Spelling

- Has difficulty sounding out simple words (cat, map, nap)
- Complains about how hard reading or spelling is, or avoids reading
- Has trouble reading/spelling sounds in sequence (left for felt)
- Reading is inaccurate, slow, and/or is not automatic
- Spells words incorrectly, even common high frequency (was, were, then)
- Relies on pictures or memorization when reading
- Confuses similar-looking letters and words (b/d, p/q, was/saw)

Grades 3 to 6

Possible Strengths

- Large vocabulary for his/her age
- Strong comprehension of stories read/told to him/her
- Strong thinking skills: conceptualization, reasoning, imagination, abstraction

- Ability to get the "big picture"

Possible Weakness

General

- Has trouble recalling dates, names, telephone numbers, random lists, math facts
- Has low self-esteem or anxiety

Speaking

- Confuses words that sound alike (e.g., tornado for volcano; lotion for ocean)
- Uses imprecise language (e.g., stuff, things)
- Oral language abilities much higher than writing skills

Reading/Spelling

- Reading is slow, inaccurate or halting/choppy
- Has trouble reading unfamiliar words; difficulty sounding out multisyllabic words
- Lacks strategies for sounding out new words
- Avoids reading aloud
- Has poor spelling and/or handwriting
- Spells words the way they sound, rather than the way they look
- Avoids reading and writing tasks; strongly prefers word processing

Grades 6 to 9

Possible Strengths

- A high level of understanding of what is read aloud
- A sophisticated spoken vocabulary
- Strong in areas not dependent on reading, such as math, computers and visual arts
- Strong in conceptual subjects, such as philosophy, science, social studies and creative writing
- Exceptional empathy and warmth, emotional intelligence

Possible Weakness

General

- Has trouble finishing tests on time
- Has difficulty learning a foreign language or reading music
- Has low self-esteem or anxiety
- Has to study more than peers

Speaking

- Pauses or hesitates when speaking, using “um” and “like” repeatedly
- Mispronounces words that are multisyllabic, unfamiliar, or complicated
- Uses imprecise language (e.g., stuff, things)
- Seems to need extra time to respond to questions
- Oral language abilities much higher than writing skills

Reading/Spelling

- Reading and writing are slower than those of peers
- Needs to reread for meaning
- May answer higher-level questions about text but miss easier, literal questions
- Avoids writing; compositions are brief and simplistic
- Poor spelling and/or handwriting
- Suffers fatigue when reading; avoids reading

Grades 9 to 12 and Beyond

Possible Strengths

- Excellence in writing if content is the focus and spelling is not important
- Exceptional empathy and warmth, emotional intelligence
- Success in areas not dependent on rote memory
- Talent for high-level conceptualization and original insights
- Big-picture thinking
- Inclination to think outside of the box
- Noticeable resilience and ability to adapt

Possible Weakness

General

- Has low self-esteem or anxiety
- Knowledge not reflected in standardized-test scores
- Has to study more than peers

Speaking

- Not fluent, often anxious while speaking
- Pauses or hesitates when speaking, using “um” and “like” repeatedly
- Uses imprecise language, (e.g., stuff, things)
- Struggles to retrieve words (i.e., “tip of my tongue” moments)

- Often pronounces names incorrectly; trips over parts of words; avoids saying words that might be mispronounced
- Has difficulty remembering names of people and places; confuses names that sound alike
- Struggles when put on the spot in conversations or writing
- Has spoken vocabulary that is smaller than listening vocabulary

Reading/Spelling

- Reading requires great effort and is at a slow pace
- Rarely reads for pleasure
- Avoids reading aloud
- Avoids writing; handwritten compositions are brief and simplistic
- Word-processed compositions can be disorganized and lack cohesion
- Has poor spelling and/or handwriting
- Has difficulty determining the correct spelling of words, even when using a spell checker while word processing

For More Information

Computer-Based Information

The International Dyslexia Association (IDA) also has a series of free downloadable **Fact Sheets** that cover such topics as "Dyslexia Basics" and "Helpful Terminology." The organization also maintains a list of **Frequently Asked Questions** which can be located on the IDA website.

The National Center on Improving Literacy (NCIL) offers a broad range of resources for school leaders, teachers, parents and families. It offers the series *Improving Literacy Briefs* with companion infographics.

The Yale Center for Dyslexia and Creativity's *Signs of Dyslexia*, the Fairfax County Public Schools' *Dyslexia Handbook* and the University of Michigan's *Clues to Dyslexia* provide additional information about the signs and strength of individuals with dyslexia.

View Video

View "What Is Dyslexia?" a helpful video tutorial by Kelli Sandman-Hurley.

Video recordings of Dr. Jack Fletcher's presentation at the 2017 Colorado Dyslexia Forum and Dr. Margie Gillis' presentation at the 2018 Colorado Dyslexia Forum are available on the CDE dyslexia website.

Reading Rockets and the National Center for Improving Literacy have produced an extended video interview in 13 brief segments with Dr. Nadine Gaab, a research associate at Boston Children's Hospital and an associate professor at Harvard Medical School, who discusses a range of topics, including early screening for reading risk and the paradox of dyslexia. The video "What is the dyslexia paradox?" is available on the Reading Rockets website.

View the video "Embracing Dyslexia," a thoughtful and moving exploration of dyslexia from an insider's perspective. The video in English and in Spanish. weaves together interviews with parents, adults with dyslexia, researchers, educators and experts.

View the movie *The Big Picture: Rethinking Dyslexia*. The movie provides personal and inspiring accounts of the dyslexia experience from children, experts and iconic leaders, including Sir Richard Branson and financier Charles R. Schwab.

Books and Print Information

Basic Facts about Dyslexia & Other Reading Problems, by Louisa Cook Moats and Karen E. Dakin, is available from the International Dyslexia Association (IDA).

Beginning to Read: Thinking and Learning About Print (1990), by Marilyn Jager Adams, is a comprehensive look at the history of reading instruction and the research that led to our understanding of the role that phonological awareness plays in reading.

Overcoming Dyslexia (2003), by Sally Shaywitz, M.D., is a comprehensive book that covers many aspects of dyslexia, including what dyslexia is; how dyslexia is diagnosed; and what parents, schools and students should know about dyslexia. An updated version was published in 2016.

Chapter 3: Assessment and the Identification of Dyslexia

In this chapter:

There is little debate as to whether the early identification of students is a useful mechanism by which students who are at risk for reading problems, including dyslexia, can be routed to appropriate next steps such as intensive early intervention (in preschool or kindergarten) or more in-depth diagnostic testing for diagnosis of reading disabilities.

-National Center on Improving Literacy, 2019

3.1 Assessment Within a Comprehensive Literacy Program

Assessment is a process used to gather information about students' learning. An assessment may be a screening, progress monitoring, a diagnostic evaluation, or an outcome measure. While the primary purpose of assessment is to gather data, it is important to remember that the data will be used to plan, and adjust as needed, classroom instruction and any subsequent intervention. All assessment practices should be evidence-based and embedded in a multi-tiered system of supports.

Assessment is an integral part of any literacy program. Assessment practices should be comprehensive systemic and should range from universal screening for risk of reading difficulties to specific diagnostic assessments for reading difficulties, including dyslexia. The varied types of assessments used within a comprehensive approach to literacy programming each have a specific purpose:

- **Universal screening** is used to determine a student's risk for reading difficulties and the need for intervention. A universal screening applies to all students. (See Universal Screening later in this chapter.)
- **Progress monitoring** is used to determine whether progress following instruction is adequate or whether more intensive or different intervention is required. (See Progress Monitoring later in this chapter.)
- **Diagnostic evaluation** is used to identify a student's learning strengths and weakness and the underlying root cause of any academic difficulties. The information from this type of assessment can be used to further refine intervention. In some instances, a comprehensive diagnostic evaluation is essential in determining whether the profile fits the definition of a learning disorder and can provide a diagnosis or the identification of a specific disability. (See Diagnostic Evaluation later in this chapter.)

Comprehensive literacy programs also include **summative assessment.** A summative assessment looks at instructional outcomes and often provides a "big picture" of instruction. Summative and outcome measures can help in identifying positive and concerning trends about how the comprehensive or systemic approach to literacy instruction is meeting the needs of all students, as well as specific subsets of students with identified risk.

Colorado's Reading to Ensure Academic Development Act requires universal screening for all students in Kindergarten through the third grade. The READ Act also details the required progress monitoring and the specific monitoring intervals at various levels of risk for reading failure. The legislated use of diagnostic assessment to inform intervention, as detailed in the READ Act, is in keeping with the use of a multi-tiered system of supports, which is foundational to this important early literacy legislation.

A more in-depth look at each category of assessment within the context of comprehensive literacy programming and Colorado's READ Act is offered below:

Universal Screening

The following summary is taken from the International Dyslexia Association's fact sheet on universal screening. We thank the IDA for sharing their resources.

Since research has shown that the rapid growth of the brain and its response to instruction in the primary years make the time from birth to age 8 a critical period for literacy development (Nevills & Wolfe, 2009), it is essential to identify the instructional needs of struggling students as soon as possible. It is imperative to "catch them before they fall" (Torgesen, 1998). The vast majority of children who receive appropriately designed instruction and intervention will achieve grade-level reading if they receive help by first grade (Vellutino, Scanlon, Sipay, Small Pratt, Chen & Denckla, 1996). Psychological and clinical implications of poor reading development can be prevented or minimized if we identify and intervene as early as possible.

What is a screening?

Screening measures, by definition, are typically brief assessments of a particular skill or ability that is highly predictive of a later outcome. Screening measures are designed to quickly sort students into one of two groups: those who require intervention and those who do not. A screening measure needs to focus on specific skills that are highly correlated with broader measures of reading achievement, resulting in a highly accurate sorting of students.

Universal screening tools have the following characteristics:

- Quick and targeted assessments of discrete skills that indicate whether students are at risk and/or are making adequate progress in reading achievement;
- Alternate equivalent forms so they can be administered three or four times a year;
- Standardized directions for administration and scoring; and
- Established reliability and validity standards.

Screening Administration

A screening instrument needs to be quickly and easily administered. Screening can occur as early as preschool but no later than kindergarten and at least three times a year through third grade. It is imperative for screening to occur for all children, not just the ones at risk or who have already been determined to have

reading failure. Students who are English Language Learners or speak in a different dialect should be included in this assessment. (See Chapter 7 for considerations for special populations, including English Language Learners.)

Teacher input on a child's phonological, linguistic and academic performance is also essential. Teachers can complete screening tools that require their rating of a child's abilities on a scale to measure risk of reading disability.

What are typical screening measures by grade level?

Though a quick assessment, a screening battery should include key domains, identified as predictors of future reading performance.

Kindergarten

Research indicates that kindergarten screening measures are most successful when they include assessment of the following areas (Catts et al., 2015; Jenkins & Johnson, 2008):

- phonological awareness, including phoneme segmentation, blending, onset and rime;
- rapid automatic naming, including letter-naming fluency;
- letter-sound association;
- phonological memory, including nonword repetition; and
- oral expressive and receptive language, including vocabulary, syntax and comprehension. These should also be considered since oral language development can be predictive of later reading outcomes.

First Grade

Research indicates first-grade screening measures are most successful when they include assessment of the following areas (Compton et al., 2010; Jenkins & Johnson, 2008):

- phoneme awareness, specifically phoneme segmentation, blending, and manipulation tasks;
- letter naming fluency; letter-sound association;
- phonological memory, including nonword repetition;
- oral vocabulary; and
- word recognition fluency (i.e., accuracy and rate).

The Center on Response to Intervention's screening briefs suggest that:

- oral reading fluency should be added by the mid-first grade; and
- oral expressive and receptive language (including vocabulary, syntax and comprehension) should also be considered since oral language development can be predictive of later reading outcomes.

Second and Third Grades

The Center on Response to Intervention's screening briefs indicate that in second grade, screening assessment should include:

- word identification, including real and nonsense words;
- oral reading fluency;
- reading comprehension; and
- consideration of oral expressive and receptive language (including vocabulary, syntax and comprehension) since oral language development can be predictive of later reading outcomes.

The Colorado READ Act requires universal screening for all students in grades K-3. On CDE's READ Interim Assessments webpage, Colorado has identified seven screening tools that can be utilized in this process. It is important to know which discrete skills are measured by the READ Act screener selected by the district and/or school.

The role of universal screening to identify students in the primary grades who are in need of reading intervention has been widely studied. The old saying "Just wait, and they will catch up" does not hold up to all the empirical data and support for providing early intervention for struggling readers. Educators need to be well versed in the evidence-based methods that identify the risk for reading difficulty, and they need to make good decisions that provide appropriate educational interventions for their students who may be struggling. These decisions need to be informed by data gathered as a result of efficient assessments and progress monitoring that are accomplished in a regular, timely manner. It is critical that educators understand the importance of these factors in universal screening and early intervention to ensure that all students have the best opportunities to develop adequate literacy skills.

Progress Monitoring

Data from universal screenings should be used to make informed decisions about evidence-based interventions and the progress monitoring that should follow. Interventions should address the needs of the student, as identified by the screening process. *Progress monitoring* is then done to determine whether progress is adequate or whether more (or different) intervention is required.

Progress should be monitored frequently to determine the student's response to the chosen intervention and rate of improvement. The *IES Practice Guide for Assisting Students Struggling with Reading: Response to Intervention (RtI) and Multi-Tier Intervention in the Primary Grades* (Gersten et al., 2008) states that progress can be monitored weekly, but should be monitored no fewer times than once a month. Colorado's READ Act requires that the universal screening measures on the CDE list of vetted interim assessments (screeners) also include progress monitoring probes and procedures.

Diagnostic Evaluation

There is no one test or assessment tool that measures all reading skills. Different assessments measure different discrete skills. Ideally, students found to be at risk following general screening should be administered multiple diagnostic measures to ensure that all identified skills have been assessed at the appropriate grade level. This type of diagnostic testing serves to further inform the focus, time and intensity of small group intervention.

In many instances, the terms "diagnostic testing" and "diagnostic evaluation" are not synonymous. Diagnostic testing that is completed to inform the design of intervention is often less comprehensive than a diagnostic evaluation that is completed to diagnose the cause of a student's learning difficulties. According to the IDA's *Dyslexia Assessment Fact Sheet* (Lowell, Felton, & Hooks, 2014), a formal clinical evaluation, sometimes

referred to as a diagnostic evaluation, is necessary to determine a diagnosis of dyslexia if the student continues to struggle with literacy skills despite high-quality instruction using a Response to Intervention (RtI) approach (See Sections 3.3, 3.4 and 8.3). Areas to be assessed, in depth, by a team of individuals include the following: phonological awareness; phonological or language-based memory; rapid automatic naming; receptive vocabulary; phonics skills; decoding/encoding real and pseudo-words; oral reading fluency; and writing at the sentence and paragraph level. Evaluations are completed by trained specialists, whose titles may vary depending on whether the evaluation is completed in a school or private setting (e.g., clinical and educational psychologists and neuropsychologists; speech and language pathologists; or education specialists/diagnosticians with training in assessment).

The specific diagnostic evaluation process for the identification/diagnosis of dyslexia is detailed in Section 3.3 Identifying Dyslexia.

3.2 Early Screening of Reading Risk

Dyslexia is a neurobiological disorder. Research has shown that brain plasticity decreases through childhood. It takes four times as long to intervene in fourth grade as it does in late kindergarten (NICHD) because of brain development and because of the increase in content for students to learn as they grow older. Children at risk for reading failure can be reliably identified even before kindergarten (Gaab, 2017). … Struggling readers who do not receive early intervention tend to fall further behind their peers (Stanovich, 1986).

– International Dyslexia Association, 2017

Universal screening procedures, if designed properly, will include the assessment of the skills that are the most predictive of later reading success or failure. Current research into the early identification of dyslexia suggests that children at risk for dyslexia can be identified early when intensive interventions are the most effective. Children at risk for reading failure can be readily identified as they enter kindergarten. "Deficits in phonological awareness, automatized naming, verbal working memory and letter knowledge have been shown to be robust precursors of dyslexia in children as young as age three" according to Dr. Nadine Gaab, a leading researcher of the identification of early reading risk. Dr. Gaab, an associate professor at Boston Children's Hospital and Harvard Medical School, recently described early screening with a medical analogy:

> *The general idea here is not to diagnose children in preschool but to identify children "**at-risk**" to develop reading impairments (not just dyslexia). I often use an analogy from medicine for the argumentation: We are screening people for high cholesterol, which would be an increased risk to develop heart disease. We are not trying to diagnose people who present with high cholesterol with heart disease. If someone has high cholesterol and therefore is at-risk to develop heart disease we then provide 'evidence-based response to screening' which, in this case, would be prescribed exercise, dietary changes, maybe medication. The goal here is to prevent heart disease and not to diagnose earlier. It is hoped that fewer people then end up with a diagnosis of heart disease or if they do, it will be less severe since they already changed their diet, started exercising, take medications, etc. We want to move "**from a deficit-model to a preventive model.**" It's the same with reading impairments. We want to identify preschoolers at risk but not diagnose them with dyslexia in preschool. Then you put great 'evidence-based response to screening' in place ...*

> *so that their risk to develop dyslexia decreases OR if they develop reading problems, it will be less severe since they already had remediation/intervention since preschool. — Retrieved from email communication via Spelltalk listserv (January 15, 2019)*

Dr. Gaab has intensively studied the issues related to early identification of reading risk. In a recent article published by the International Dyslexia Association, she described three common myths associated with early screening for children at risk for dyslexia. The myths are excerpted from the article *It's a Myth That Young Children Cannot Be Screened for Dyslexia*:

> ***MYTH 1: Signs of dyslexia can be seen only after two to three years of reading instruction.***
>
> *While a diagnosis of dyslexia currently requires repeated failure learning to read, this does not mean that early signs of dyslexia cannot be observed in preschool (or possibly earlier). Deficits in phonological awareness, rapid automatized naming, verbal working memory, and letter knowledge have been shown to be robust precursors of dyslexia in children as young as age three (Puolakanaho et al., 2007).*
>
> *A recent study of more than 1,200 kindergartners in New England not only identified six independent reading profiles, including three dyslexia risk profiles, but also showed that these reading profiles are remarkably stable over a two-year window (Ozernov-Palchik, in press).*
>
> *Furthermore, studies involving brain measures, such as electroencephalography or magnetic resonance imaging, have shown that the brain characteristics of individuals with dyslexia can be observed as early as infancy and preschool, especially in children with a genetic risk for dyslexia.*
>
> *A longitudinal dyslexia study in Finland, which followed children from birth until age 8, showed that early differential brain measures could distinguish at-risk children who later developed reading problems from those who did not (Leppanen et al., 2010). Additionally, several studies have shown alterations in white matter (the highways that connect two brain areas and enable fast information flow) in young pre-reading children who subsequently developed a reading disability (Wang et al., in press; Kraft et al., 2016).*
>
> *These studies suggest that these children are stepping into their first day of kindergarten with a brain less optimized to learn to read. Why wait three or more years before we give them access to additional resources essential for improving their reading performance?*
>
> ***MYTH 2: Even with early screening, early intervention is not effective.***
>
> *It is certainly true that most reading interventions are designed for older children who have been struggling for some time. However, converging evidence points to the importance of high-quality classroom reading instruction in early grades and early interventions for at-risk students (e.g., in a small group setting) to improve the effectiveness of remediation (Blachman et al., 2004).*
>
> *A meta-analysis comparing intervention studies of at least 100 sessions reported larger effect sizes in kindergarten and first grade than in the later grades. Furthermore, a meta-analysis across six studies revealed that when at-risk beginning readers received explicit and intensive instruction, 50 to 90% of these children reached average reading performance levels (Torgesen, 2004).*

Without high-quality instruction and intervention, early reading problems can manifest as serious reading disabilities later on (Stanovich, 1986). Moreover, several studies have shown that the brain's ability to change and adapt in response to experience (brain plasticity) decreases throughout the childhood years (Johnson, 2001; Johnston, 2009) and that certain skills are harder to acquire after a 'sensitive period' (Johnson, 2005). For instance, for most people, learning to speak a second language, especially without an accent, comes with relative ease in early childhood but becomes more difficult later in life (Birdsong, 2001).

MYTH 3: Early screening costs too much for school districts, and there is no time for additional testing.

There is some truth to this statement. Each school and district must determine the costs of early universal screening. However, many districts already have valid tools for screening the key indicators of dyslexia on hand — the same tools used in second or third grade to assess children who repeatedly fail to learn to read. Reading specialists or special education teachers already may be trained to administer these assessments.

Early assessment could be conducted prior to the start of kindergarten (e.g., in combination with some pre-kindergarten events that already occur), at daycare centers, preschools, or even in collaboration with pediatricians' offices at the 4- or 5-year-old well-visits. This may add some personnel costs, but it would reduce screening hours and associated costs later in the school year and beyond.

Additional resources are needed for the interpretation and dissemination of the screenings and their results. Various companies now offer the scoring of standardized tests with turnarounds as fast as two weeks, and several online screening tools currently under development aim to reduce both labor and early screening costs.

Yes, early screenings entail significant costs, but given the costs associated with remediation and the treatment of accompanying psychological and medical problems (e.g., depression, anxiety, and psychosomatic conditions related to academic stress), the benefits of early screening outweigh the costs.

It is important to note that the re-allocation of resources for early identification/intervention should not negatively impact intervention efforts in later grades. More specifically, there will be students in older grades who need intervention, and funds used for early intervention should not be taken from the funds currently allocated for older students. If early screening and early intervention achieve expected goals, eventually there should be fewer older students who need that intense intervention. In the interim, those who missed the early screening and intervention still exist. Also, once early screening and early intervention become routine and effective (even with a 50% to 90% success rate), there will be some older students who continue to need support.

There is ample current research in early screening of reading risk that has consistently shown that early, developmentally appropriate measures of phonological awareness, rapid naming, oral listening comprehension, verbal working memory and letter knowledge have solid predictive validity for future reading

success or failure. However, there are additional, important factors in evaluating a young child's risk for reading difficulty.

Perhaps the earliest indicator of risk for reading failure is a family history of reading difficulties (Catts, 2017). Research shows that approximately 40% to 60% of children with a single parent or a sibling with reading disability will have reading problems themselves (Gilger, Hanebuth, Smith & Pennington, 1996; Scarborough, 1990; Snowling, Gallagher, & Frith, 2003). Studies also show that family risk for reading difficulty, including dyslexia, often experience problems in the development of oral language. A recent study reported that nearly 30% of preschool children with family risk for dyslexia met the criteria for having a specific language impairment (Nash, Hulme, Gooch, & Snowling, 2013).

Since research has shown that early deficits in the development of language are often associated with subsequent difficulties in learning to read, early screening of reading risk should include family history and a review of the child's developmental history. For example, one of the earliest indicators of problems in oral language and, in some cases, subsequent reading difficulties is failure to begin talking at the appropriate developmental stage. Follow-up investigations have shown that children who were late talkers are generally less skilled than typical children in reading and spelling throughout the school years (Lyytinen et al., 2005; Preston et al., 2010; Rescorla, 2002). Jonathan Preston and colleagues in 2010 also reported that these children were approximately four times more likely to be diagnosed with a reading disability than were children who were not late talkers.

In recent years, important advances have been made in the early identification of risk for reading difficulties such as dyslexia. Educators of young children no longer have to wait for reading problems to develop before the underlying deficits can be identified and addressed. This important work shows that family history of reading difficulties and/or the presence of early developmental language problems often foretell later reading difficulties. When these factors are considered along with the results of early universal screening of predictive skills of reading success and failure, evidence-based interventions can be deployed for those determined to be at risk. Research demonstrates that children who are at risk for dyslexia have better outcomes when identified early and provided with appropriate interventions (Wanzek and Vaughn, 2007).

3.3 Identifying Dyslexia

Decades of research and national test scores confirm that reading problems commonly occur and affect as many as one in five bright and motivated students who have average or above-average intelligence. Adult literacy problems are also common, affecting one in four who are intelligent but have not been able to attain a functional literacy level. Research demonstrates that additional direct instruction provided appropriately, beginning in kindergarten through third grade, can help all but the most severely impaired students catch up to grade-level literacy skills and close the gap for most poor readers. Assessment is the first step in identifying these students early to make sure they receive the effective instruction they need to succeed.

— International Dyslexia Association

In Section 3.2 – Early Screening of Reading Risk, the importance of early assessment of risk for reading failure was emphasized. However, the assessment of dyslexia is not limited to any specific age or time interval. School-aged students, or adults of any age, can be evaluated for dyslexia. This type of evaluation is frequently

referred to as a diagnostic evaluation but is sometimes referred to as a multi-disciplinary evaluation, psycho-educational evaluation, educational evaluation or comprehensive education evaluation. Regardless of the name, the purpose of this type of evaluation is to determine whether the individual demonstrates the characteristics of dyslexia and to rule out other causes of the identified reading/writing concerns. Testing for dyslexia can verify the presence of a specific learning disability/dyslexia, can aid in determining the severity of the dyslexia, and can provide the needed documentation for eligibility for specially designed instruction (special education) and accommodations throughout an individual's educational career from elementary school through college and postgraduate education.

A comprehensive diagnostic evaluation for dyslexia may be completed as part of the determination of eligibility for special education in a public school, or it may be administered in a hospital, clinic or private setting. Evaluations of this type may be completed by a team of professionals or by a single clinician depending on the setting. A primary-care physician or pediatrician may refer an individual to a dyslexia specialist, psychologist or neuropsychologist for assessment. A public school assessment team is likely to include an educational psychologist; a learning specialist or special education teacher; a speech-language pathologist; and a school social worker. Additional specialists such as an occupational therapist and/or a physical therapist might be involved in the evaluation process depending on the individual's needs. Chapter 8: Dyslexia and Legislation details the legal requirements for special education eligibility as mandated by the Individuals with Disabilities Education Act (IDEA) or for accommodations as outlined in the Rehabilitation Act of 1974, Section 504.

In the following section, the process and components of a comprehensive, diagnostic evaluation for dyslexia will be described.

Phase I: Collecting Background Information and Understanding the Referral Question/Concerns

The evaluation of reading disabilities and/or dyslexia involves the collection of information about family history, and the student's birth, developmental, and medical history. This can be accomplished through an interview with parents or immediate family and, depending on age, the student. Questionnaires are often used to collect this information prior to the interview, so the clinician can focus on areas that have the most potential effect on the evaluation and the ultimate diagnosis during the interview. It is also important to review the student's educational history, including school records, all prior assessment reports and intervention records. Sometimes, teachers and interventionists working with the students are asked to complete questionnaires as part of the data collection stage of the evaluation. Student work samples — for example, handwriting or spelling/writing samples — can also be reviewed when collecting data. During this stage of the evaluation process, it is important for the clinician or evaluation team to understand what concerns have led to the request for an evaluation.

Phase II: One-on-One Assessment of Essential and Academic Skills and Abilities

Once the evaluation team or clinician has a solid understanding of the concerns that led to the evaluation and have compiled the background information, they will begin Phase II of the evaluation process. During this phase, the student will be administered a number of diagnostic measures during a one-on-one session or series of sessions. The assessment instruments utilized need to meet professional standards for reliability and validity, and are most commonly norm-referenced measures.

The evaluator should use assessment tools (tests) that are specifically designed to measure specific skills that align to the student's age, grade and developmental needs. The following essential areas should be assessed during this phase of the diagnostic or educational/psycho-educational evaluation:

- **Expressive and Receptive Vocabulary** — words the student uses when speaking and words the student understands when listening;
- **Listening Comprehension** — what the student understands when listening to oral language at the sentence and passage level. Listening comprehension is often used as a gauge of the student's potential for reading comprehension, when limited/inaccurate decoding does not impair comprehension of print;
- **Phonological/Phonemic Awareness** — the student's awareness of and access to the sounds structure of his/her oral language;
- **Rapid Automatized Naming** — speed of naming common objects, letters, colors and/or digits;
- **Verbal Memory Skills** — including phonological memory and the ability to recall sounds, syllables and words;
- **Alphabetic Principle and Phonics Skills** — understanding that letter symbols represent specific sounds, and appreciating combinations and patterns of letters and their relationship to speech sound;
- **Decoding and Word Recognition** — ability to use sound-symbol association to identify words and pseudo-words (nonsense words);
- **Oral Reading Fluency** — the student's ability to read single words and passages accurately, with appropriate phrasing and at a pace that supports comprehension;
- **Reading Comprehension** — the ability to make meaning from print, including both oral and silent reading passages;
- **Spelling** — the student's ability to accurately encode words from dictation; and
- **Written Expression** — the student's ability to formulate sentences and passages using basic conventions of English (e.g., capitalization, punctuation, and grammar).

Most comprehensive diagnostic evaluations also include:

- **Math Calculation Skills** — accuracy and automaticity of basic computational processes;
- **Math Fluency** — the ability to quickly recall basic math facts;
- **Mathematical Problem-Solving** — the ability for math reasoning and the completion of word problems;
- **Processing Speed** — the student's ability to complete simple tasks quickly; and
- **General Information** — the student's store of factual information often related to content areas of science, social studies and basic literature.

Some comprehensive diagnostic evaluations include:

- **Cognitive (Intelligence) Assessment** — Cognitive testing is no longer required as part of the specific learning disabilities identification process. However, this type of assessment is often included to identify twice exceptional students (most commonly gifted students with dyslexia) or during the assessment of older students when their eligibility for accommodations at the college/postgraduate level or during high-stakes testing requires this type of assessment (e.g., college entrance exams, medical school entrance exams, the bar exam).

Phase III: Scoring, Interpreting and Reporting Assessment Findings

Once all the testing is completed, the clinician or assessment team will score and analyze the assessment results. After this review and analysis, a written report is completed. The report should summarize important developmental and historical information, specifically highlight prior and pertinent assessment results, discuss current assessment data, and provide a clear interpretation and/or diagnosis of the assessment findings. A comprehensive report should draw specific recommendations from the assessment findings and highlight necessary accommodations. In some instances, the report will serve as a statement of eligibility for specially designed instruction (special education); in other instances, it may specifically serve to differentiate the diagnosis of dyslexia from other causes of poor reading or literacy. In all cases, assessment data should be reported as standard scores and percentiles, thus allowing for accurate comparison of growth over time and comparisons to others of the same age. The summary report should be shared with parents and professionals working with the child. It is also helpful for the child to receive an age-appropriate explanation of the evaluation outcomes.

3.4 Clinical Diagnosis Versus School Identification

There is frequent confusion regarding the difference between the clinical diagnosis of dyslexia and the school-based identification of dyslexia as a specific learning disability. The diagnostic term “dyslexia” can be used by clinicians working in a private clinical setting *and* by evaluation teams found within a public school setting. The use of dyslexia as a descriptor of a specific type of reading disorder (and a specific type of learning disability) is not limited to those working in a medical setting. Rather, its use is only limited by the training and assessment experience of those who would use the term. In Colorado, there is no statute or regulation that would prohibit the use of the word dyslexia in a school setting or within school-generated documents. Likewise, there are no federal rules that prohibit the use of the term “dyslexia” when identifying a phonological-based, word-level reading disorder in a school-based setting. (See Chapter 8: Dyslexia and Legislation) In using the descriptor “dyslexia,” the person or persons using the term have a responsibility to thoroughly understand: typical reading development; what dyslexia is and is not; the key features of dyslexia; how it is assessed; and their obligation to use valid and reliable measurement tools and sound diagnostic judgment when making such a diagnosis.

Understood (Understood.org), a consortium of 15 nonprofit organizations that joined forces to support parents of children with learning and attention issues, offers an easy-to-read comparison of a school diagnosis and a clinical diagnosis as commonly recognized in current practice. In both instances, the purpose of the evaluation is the identification of the student’s specific profile leading to the implementation of an appropriate remediation plan.

Understood has a webpage, called *The Difference Between a School Identification and a Clinical Diagnosis*, which provides a table highlighting the differences.

For More Information

Computer-Based Information

The IDA has the fact sheet *Dyslexia Assessment: What Is It and How Can It Help?* available free on its website. Another publication, *Basic Facts about Assessment of Dyslexia*, is available from the IDA bookstore.

The National Center for Improving Literacy recently published *Screening for Dyslexia* (2019), a white paper that discusses universal screening for dyslexia risk.

The Tuft University Center for Reading and Language Research offers online access to articles and resources, including the article "Tackling the 'Dyslexia Paradox': Reading Brain and Behavior for Early Markers of Developmental Dyslexia," by Ola Ozernov-Palchil and Nadine Gaab.

Understood offers a range of information regarding assessment on its Evaluations webpage.

Learn more about the Colorado READ Act at on CDE website.

View Video

Reading Rockets and the National Center for Improving Literacy have produced an extended video interview in 13 brief segments with Dr. Nadine Gaab, a research associate at Boston Children's Hospital and an associate professor at Harvard Medical School, who discusses a range of topics, including early screening for reading risk and the paradox of dyslexia. The video "What is the dyslexia paradox?" is available on the Reading Rockets website.

Books and Print Information

Essential of Assessing, Preventing and Overcoming Reading Difficulties (2015), by David Kilpatrick

Chapter 4: School-Based Supports for Students with Dyslexia

In this chapter:

4.1 Introduction to School-Based Supports

> *One of the great mysteries to challenge researchers is how reading ability develops and enables skilled readers to read and comprehend with ease. Skilled readers can focus their attention and thought on the meaning of text, while the mechanics of reading operate unobtrusively. A major contributor to this skill is the ability to read words as single units quickly and automatically.*
>
> *— Erhi, Cardoso-Martins and Carroll (2014)*

Research in evidence-based reading instruction and the science of dyslexia has demonstrated that there are two key ingredients in addressing the academic needs of students with dyslexia: early diagnosis and effective instruction. In Chapter 3 of this handbook, early identification of reading risk and the comprehensive evaluation for dyslexia are discussed. Chapter 4 focuses on the design and delivery of effective instruction for all students, including those with dyslexia.

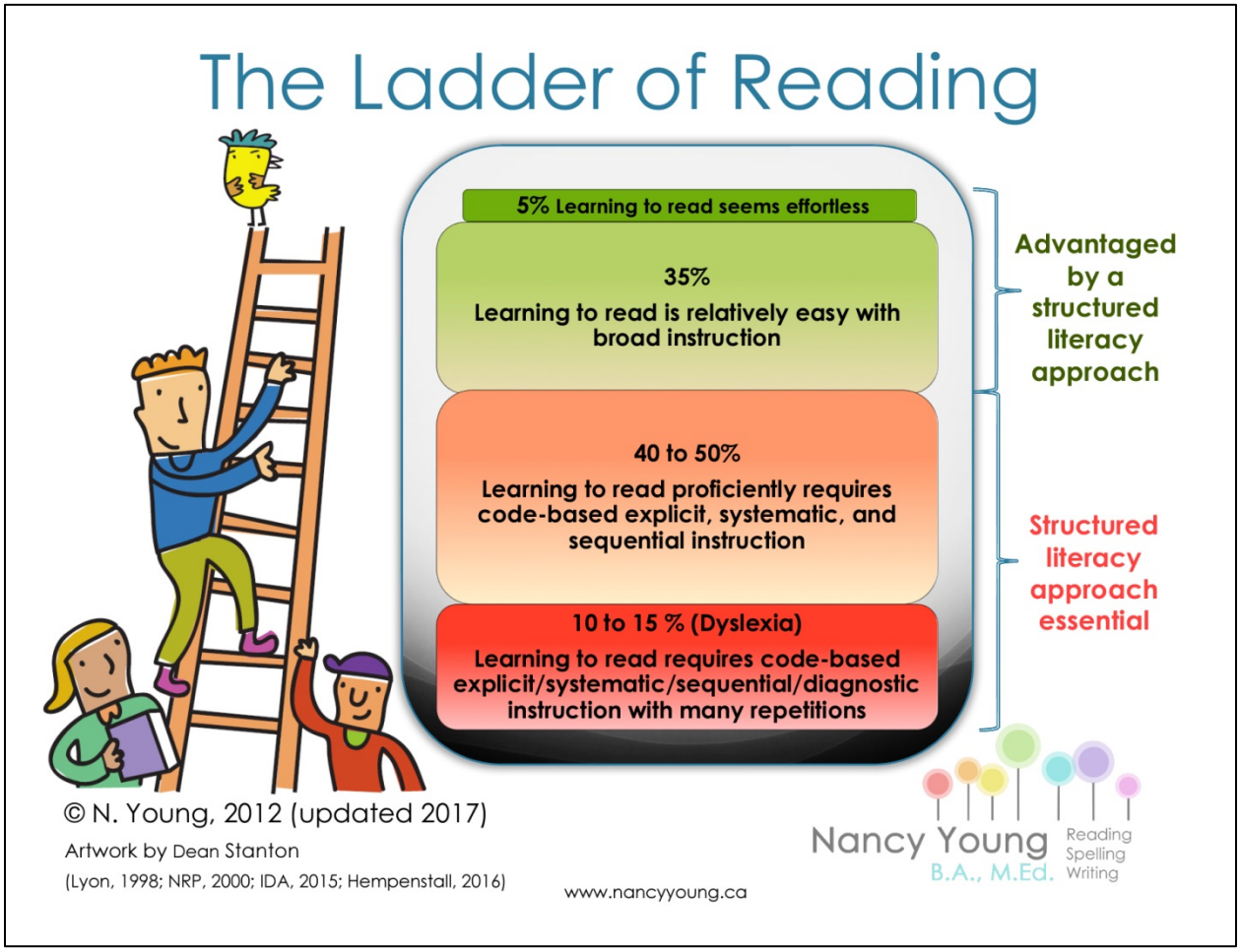
As described in Chapter 1, *all* students will benefit from participation in a comprehensive literacy program. Students need instruction that explicitly teaches the essential components of literacy (oral language; phonemic awareness; phonics; fluency; vocabulary including morphology; reading comprehension; and written expression including spelling, syntax and grammar) in a manner that incorporates the guiding principles of what is commonly referred to as Structured Literacy.

Research into the science of reading has created an understanding that while a Structured Literacy approach to instruction benefits *all* students, it is not only beneficial to students with dyslexia but *critically essential* to their success in becoming readers and writers (Kilpatrick, 2015; Erhi et al., 2001; Foorman et al., 2014).

The April 2018 issue of the *Examiner,* a bimonthly electronic newsletter of the International Dyslexia Association, introduced readers to an infographic titled *The Ladder of Reading*. The infographic, created by IDA member Nancy Young, is used in this handbook with her permission. In sharing the infographic with readers, the IDA stated:

> *The concept of* The Ladder of Reading *emerged during Young's lectures with teachers and parents who believed the myth that Structured Literacy was only beneficial and necessary only for*

struggling readers. To counter that misunderstanding, she created an infographic featuring the categories and percentages that illustrated the ratio of individuals who require an explicit, sequential, systematic, phonics-based approach to learning to read, compared to the small proportion of individuals who learn to read effortlessly. With a few well-chosen words, the Ladder conveys the point, frequently unknown, that a Structured Literacy approach to beginning reading is advantageous for most students.



More information related to the percentages and statistic used in the infographic can be found on the International Dyslexia Association webpage through the link "*The Ladder of Reading Statistics*".

The International Dyslexia Association's fact sheet *Effective Reading Instruction for Students with Dyslexia* (2015) explains that the most difficult challenge for students with dyslexia is learning to read. With this primary problem in mind, this handbook will first focus on reading instruction and how evidence-based methods recommended incorporate other important literacy skills, such as oral language, spelling, and written communication.

4.2 Brief Overview of the Science of Reading

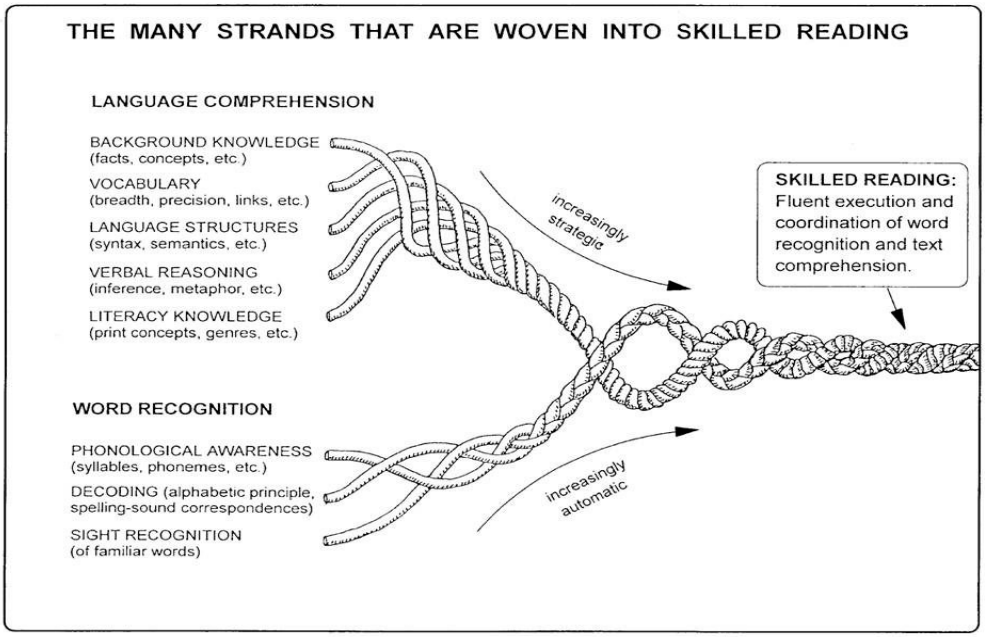
Reading is complex and reading research is even more complex. Renowned cognitive neuropsychologist and psycholinguist Mark Seidenberg helps the non-researcher develop a beginning understanding of what reading research has accomplished (*Language at the Speed of Sight*, 2017):

> *We understand the basic mechanisms that support skilled reading, how reading skill is acquired, and the main causes of reading impairments.*
>
> *We know which behaviors of three- and four-year-olds predict later reading ability.*
>
> *We know how children become readers during the first years of schooling and the obstacles that many encounter.*
>
> *We know what distinguishes good from poor readers, younger from older skilled readers, and typical readers from those who are atypical because of constitutional factors (such as hearing or learning impairment) or environmental ones (such as inadequate instruction or poverty).*
>
> *We understand what is universal about reading (things that all readers do the same way because their brains are essentially alike) and what is not (because writing systems differ).*
>
> *We have identified the main neural circuits involved in reading and some of the anomalous ways they develop in children with reading impairments.*
>
> *We even have computational models of learning to read, skilled reading, dyslexic reading, and the loss of reading ability due to brain injury.*
>
> *This vast research has led to the development of methods that can reliably help many children who struggle to read.*

Gough and Tunmer in 1986 and Gough and Hoover in 1990 described reading comprehension as the product of decoding (word recognition) and language comprehension. Their model, referred to as the "Simple View of Reading," is represented by the formula below:

> Decoding (D) x Language Comprehension (LC) = Reading Comprehension (RC)

Later, at the start of this millennium, Hollis Scarborough, another leading researcher, expanded on the "Simple View of Reading" and created a graphic representation of reading as a multi-faceted skill that is gradually acquired through many years of instruction and practice. Scarborough's *Reading Rope* (2001) demonstrates how the subskills that comprise **word recognition** and **language comprehension** work in tandem and allow students to read fluently and coordinate automatic word recognition with text comprehension. This groundbreaking infographic continues to inform the design and delivery of effective reading instruction.



As a result of Gough's, Scarborough's, and others' continuing research, the formula for the "Simple View of Reading" is currently most typically represented as:

WR (Word Recognition) x LC (Language Comprehension) = RC (Reading Comprehension).

4.3 Structured Literacy

There has long been consensus among reading researchers, cognitive scientists, and those who have spent hundreds of hours teaching students with dyslexia that there is an approach to reading instruction that is based in science, uses evidence-based strategies and, most importantly, is effective. Structured Literacy is not a program but an approach to instruction that emphasizes the structure of language. These language structures include phonology (the speech sound system), sound/symbol associations, syllable structures, orthography (the writing system), syntax (the structure of sentences), morphology (the meaningful parts of words), semantics (word meaning and the relationship among words), and the organization of spoken and written discourse.

Structured Literacy teaches the essential components of reading/literacy as represented by the *Literacy How Reading Wheel*, which was introduced in Chapter 1: Introduction:

- Oral Language
- Phonemic Awareness
- Phonics and Spelling
- Vocabulary and Morphology
- Fluency

- Syntax
- Text Comprehension and Written Expression

While it is necessary that students are instructed in these essential content components, it is also critical that the delivery be evidence-based and consistent with the principles of effective instruction. Critical principles of effective instruction and intervention for students with dyslexia include the following:

Direct and Explicit Instruction: Structured Literacy instruction requires the deliberate and purposeful teaching of all concepts with continuous student teacher interaction. It is not assumed that students will naturally deduce these concepts on their own.

Systematic and Cumulative: Structured Literacy instruction is systematic and cumulative. Systematic means that the organization of the material follows the logical order of language. The sequence must begin with the easiest and most basic concepts and elements and progress methodically to those that are more difficult. Cumulative means each step must be based on concepts previously learned.

Diagnostic Teaching. The teacher must be adept at individualized instruction; that is, instruction must meet a student's specific needs. The instruction is based on careful and continuous assessment — both informal (e.g., observation and all types of formative assessment) and formal (e.g., normed and standardized measures). The content presented must ultimately be mastered to the degree of automaticity. Automaticity is critical to freeing all the student's attention and cognitive resources for comprehension and expression.

The IDA infographic *What is Structured Literacy?* (2016) offers a concise but complete explanation of the instructional elements and the evidence-based teaching principles of Structured Literacy.

Multisensory instructional strategies are a component of Structured Literacy. In fact, Structured Literacy has sometimes been referred to as multisensory language instruction. While the research on multisensory techniques is less robust than the research that validates other instructional principles, there exist strong clinical reports of the effectiveness of simultaneous use of visual, auditory, tactile-kinesthetic, and articulatory motor strategies during instruction. Examples include saying and writing a word simultaneously, tapping individual phonemes, and air-tracing.

Unfortunately, typically employed reading approaches such as guided reading or balanced literacy are not in and of themselves sufficient for struggling readers and not at all effective for students with dyslexia. These approaches do not provide sufficient or appropriate instruction in decoding and the essentials of the structure of language for struggling readers, including those with dyslexia. The IDA fact sheet *Effective Reading Instruction for Students with Dyslexia* explains that "what does work is Structured Literacy."

For students with dyslexia, Structured Literacy plays an essential role in developing foundational reading skills in the areas of decoding, spelling, and the automatic recall of sight words. Structured Literacy must be delivered in addition to grade-level instruction for comprehension skills, vocabulary and content area knowledge. These important skills should be taught using accommodations, as needed, including differentiated materials and assistive technology. Accommodations and assistive technology are crucial in supporting student progress in meeting grade-level standards while developing lower-level foundational skills

through Structured Literacy. Section 4.4: Accommodations and Assistive Technology provides additional information regarding accommodations and assistive technology.

Structured Literacy Use in Colorado

As pointed out earlier, Structured Literacy refers to an approach to teaching reading. It is not a program. While there are commercially published programs that are designed to meet the content criteria and instructional principles of Structured Literacy, this approach can be implemented effectively without the burden of purchasing a new reading program. Whether or not one uses a published program, comprehensive and explicit teacher training are essential to the implementation of Structured Literacy. Additionally, embedded coaching is strongly encouraged to enhance the fidelity of instruction.

In Colorado, the Exceptional Student Services Unit has used Structured Literacy as part of its federally mandated *State Identified Measurable Result (SiMR)*, a required component of Colorado's *State Systemic Improvement Plan (SSIP).* The Structured Literacy Project, initiated during the 2015-16 school year, has embraced the use of direct and explicit instruction in all essential components of early literacy instruction. Embedded within a multi-tiered system of supports, Structured Literacy lesson routines and strategies are used daily during whole group instruction (first-best instruction). Whole group instruction is supported with the inclusion of Structured Literacy reteach and practice during small group classroom instruction as needed. Additional instruction in Structured Literacy during targeted and intensive interventions has been shown to be most effective when aligned to classroom Structured Literacy instruction, when using the same scope and sequence of skills to be taught, and when incorporating consistent instructional language and routines.

Since Structured Literacy is an approach and not a specific program, schools participating in the CDE Structured Literacy Project have not had to purchase an additional published program. In order to ensure the delivery of a systematic and cumulative sequence of instruction, the CDE created a *Structured Literacy Scope and Sequence for Grades K-3* and a series of grade-specific lesson routines. The Project has supported schools in ensuring that students have access to adequate resources for practice and connected text reading, including a range of decodable texts. Since Structured Literacy teaches reading and spelling as reciprocal skills, many schools have found they no longer need to purchase a separate spelling program. The Structured Literacy approach pairs nicely with a number of existing writing programs that utilize direct and explicit instruction in sentence, paragraph and compositional writing.

Factors Increasing the Effectiveness of Structured Literacy

Research has shown that Structured Literacy is effective. However, the effectiveness of a Structured Literacy instructional approach is contingent on a number of factors. Teachers must be provided with training in both the delivery of instruction and the content of instruction. (See Chapter 6: Support for Educators.) In addition to ongoing training, teachers need access to specialists and coaches who can help them organize and deliver content using evidence-based strategies and who provide meaningful feedback about instruction. Lesson planning, daily lesson routines, corrective feedback, and lesson pacing must be done with fidelity, and instruction must offer frequent distributed practice with connected text. Teachers must understand how to use daily formative assessment to drive instruction and to inform their planning to meet the specific needs of each student. Teachers and interventionists need to collaborate and align their instruction along a continuum of time and intensity, using consistent instructional language and sequence of skills. Principals, as instructional leaders, need to create learning and teaching environments in which time for planning and collaboration is

valued; data is gathered, discussed and used to inform instruction; and expectations that *all* students can learn are held and understood by teachers, parents, and students.

4.4 Accommodations and Assistive Technology

> *"For a dyslexic reader, accommodations represent the bridge that connects him to his strengths and, in the process, allows him to reach his potential. … Far and away the most crucial accommodation for the dyslexic reader is the provision of extra time. Dyslexia robs a person of time; accommodations return it."*
>
> *— Sally Shaywitz, M.D., in Overcoming Dyslexia*

The word "accommodation" is not defined in either federal or Colorado law, but, in general, accommodations are tools or instructional strategies that provide students who have disabilities with equal access to instruction. Accommodations help students with a disability to participate fully in school and to demonstrate learning without being impeded by their disability. Necessary accommodations are typically listed in a student's Individual Education Program (IEP) if he or she has been determined eligible for special education or in a 504 Plan for students with identified disabilities and/or conditions that are not found to be eligible for special education. More information regarding pertinent federal and Colorado law can be found in Chapter 8.

Accommodations may be employed for both instruction and testing. Accommodations enable students with disabilities to demonstrate knowledge, skills and abilities without lowering learning or performance expectations and without changing the complexity of the target skills being taught or the test construct being measured.

An accommodation can be a change in timing, formatting, setting, response and/or presentation that allows a student to complete the same assignment or test as other students. Below are some examples of typical accommodations grouped by task for students with dyslexia:

- Accommodations for testing may include the provision of a human "reader" or an audio recording of the test questions; allowing students to respond to test questions orally; providing students with additional time; and providing a quiet testing location. It is important to note that accommodations allowed and used during tests and exams are those that the student uses on a routine basis.
- Accommodations for reading may include access to audiobooks and text-to-speech software; allowing students additional time to complete reading assignments; and not asking a student with dyslexia to read orally in the classroom unless the student specifically volunteers.
- Accommodations for writing may include access to speech-to-print software, providing a student with a scribe; offering students digital or photocopied notes to minimize copying from the board, thereby decreasing the stress of listening and writing simultaneously; providing graphic organizers; or the use of note-taking software applications or recording pens.
- Accommodations for spelling may include access to spellcheck and word prediction software and grading written work for content with no deduction of points for spelling errors.

- Accommodations for math may include use of a calculator, a chart of basic math facts or graph paper; providing students with lists of steps for multistep problems and algorithms; and breaking assignments into shorter segments.
- Accommodations for homework and independent task/project completion may include allowing students to take pictures of assignment instructions rather than writing them; offering visual models of how completed tasks should look; color-coding task directions, due dates, and important sub steps; and setting up binders and folders to help with organization of materials.

One way to accommodate students with dyslexia is through the use of assistive technology. Federal law (IDEA) defines an assistive technology device as "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of a child with a disability." For many students with dyslexia, access to and use of assistive technology is an essential accommodation. The accommodations listed above include examples of helpful assistive technology, such as using audiobooks or text-to-speech software to gain access to grade-level text, enabling a student to express his or her thoughts in writing through the use of speech-to-print and/or word prediction software, or enhancing a student's notetaking through the use of recording pens. More information regarding the considerations of the need for assistive technology devices, supports and services, as a necessary component in the development of an Individual Education Program (IEP) or a 504 Plan, can be found in Chapter 8.

Sometimes students with dyslexia may need modifications, which are much like accommodations. Modifications are changes to assignments, tasks, and tests that alter content and/or expectations. Examples of modifications include reducing the number of words on a spelling test or reducing the number of math problems in an assignment to decrease the length of time spent doing homework. Another common modification for a student with dyslexia is assigning an abridged version of a book that his or her classmates are reading in the original version.

Whether using accommodations or modifications, the focus should be on ensuring access and opportunity to learning that is provided to other students. Accommodations and modifications need to be tailored to the individual student's needs. The effectiveness of any chosen accommodation or modification will need to be monitored and adjusted as needed.

Finally, accommodations and modifications are not meant to take the place of evidence-based instruction of appropriate intensity to develop basic academic skills. Accommodations are most effective when the goal of the task, test, or assignment is for the student to acquire content-based knowledge as prescribed in grade-level standards.

More ideas for helpful accommodations can be found online, such as in the "Classroom Strategies, Tip and Tools" section of IDA's *Dyslexia in the Classroom: What Every Teacher Needs to Know*.

4.5 Other Considerations

An unwavering commitment to the intrinsic value of a child with dyslexia is essential. … Parents (and teachers, too) of children with reading problems should make their number one goal the preservation of their child's self-esteem.

— Sally Shaywitz, M.D., in Overcoming Dyslexia

Students with dyslexia face social and emotional challenges in addition to academic challenges. They are reported to have anxiety, depression, and other social, emotional and mental health conditions on the order of two to five times greater than their peers (Wilson et al., 2009).

The Fairfax County Public Schools' article *Social Emotional Impacts of Dyslexia* offers some suggestions and tips about helping students feel confident and successful.

The IDA also has helpful resources that address the social and emotional connection with dyslexia. The following excerpt regarding self-image is taken from IDA's free, downloadable publication *Dyslexia in the Classroom: What Every Teacher Needs to Know*:

> *Dyslexia can also affect a person's self-image. Students with dyslexia often end up feeling "dumb" and less capable than they actually are. After experiencing a great deal of stress due to academic problems, a student may become discouraged about continuing in school.*
>
> *If children succeed in school, they will develop positive feelings about themselves and believe that they can succeed in life. If children meet failure and frustration, they learn that they are inferior to others, and that their effort makes very little difference. Instead of feeling powerful and productive, they learn that their environment controls them. They feel powerless and incompetent.*
>
> *Researchers have learned that when typical learners succeed, they credit their own efforts for their success. When they fail, they tell themselves to try harder. However, when learners with dyslexia succeed, they are likely to attribute their success to luck. When they fail, they simply see themselves as stupid.*
>
> *Research also suggests that these feelings of inferiority develop by the age of 10. After this age, it becomes extremely difficult to help the child develop a positive self-image. This is a powerful argument for early intervention.*

Resources available through the IDA also address topics such as depression, stress, and anxiety. Among these resources is the IDA fact sheet titled *The Dyslexia-Stress-Anxiety Connection*.

For More Information

Computer-Based Information

The Council for Exceptional Children (CEC) recently published an informative article titled "Structured Literacy and Typical Literacy Practices: Understanding Differences to Create Instructional Opportunities," by Louise Spear-Swerling.

The National Center for Improving Literacy Resource Repository has an extensive online resource of recommended websites, downloads, and videos.

The Yale Center for Dyslexia and Creativity (YCDC) offers a variety of helpful information about accommodations and assistive technology on the YCDC Accommodations webpage.

Understood offers a range of information regarding accommodations and assistive technology in the online article titled "Know." It also has a checklist of "What to Consider When Looking at Assistive Technology".

The International Dyslexia Association (IDA) has a comprehensive fact sheet titled *Accommodating Students with Dyslexia in All Classrooms*, which was prepared by Cecil Mercer, Ed.D., a professor at the University of Florida. The fact sheet is available on the Massachusetts IDA webpage.

Tufts University Center for Reading and Language Research, Articles and Resources webpage offers online access to a number of articles and resources including *Naming Speed Deficits: Frequently Asked Questions.*

View Video

Reading Rockets and the National Center for Improving Literacy have produced an extended video interview in 13 brief segments with Dr. Nadine Gaab, a research associate at Boston Children's Hospital and an associate professor at Harvard Medical School, who discusses a range of topics, including early screening for reading risk and the paradox of dyslexia. The video "What is the dyslexia paradox?" is available on the Reading Rockets website.

Books and Print Information

Essentials of Assessing, Preventing and Overcoming Reading Difficulties (2015), David Kilpatrick

Explicit Instruction (2011), Anita Archer and Charles Hughes

Handbook of Language and Literacy: Development and Disorders (2014), Stone, Stillman, Erhen and Wallach, editors

Language at the Speed of Sight (2017), Mark Seidenberg

Overcoming Dyslexia (2004), Sally Shaywitz, M.D.

Multisensory Teaching of Basic Language Skills, Third Edition (2011), Judith Birsh, editor

Unlocking Literacy: Effective Decoding and Spelling Instruction, Second Edition (2010), Marcia Henry

Chapter 5: Community- and Home-Based Supports for Students with Dyslexia

In this chapter:

"Everybody is smart in different ways. But if you judge a fish by its ability to climb a tree, it will live its life believing it is stupid."

— Lynda Mullaly Hunt, in Fish in a Tree

5.1 Resources for Parents

Parenting is both challenging and rewarding. Parenting a child with dyslexia often has some added challenges, including finding credible and helpful information about dyslexia. There is a lot of information about dyslexia in the media, in books and articles, and online. Unfortunately, not all of these resources are reliable. Some of the information about dyslexia, the assessment of dyslexia, and the treatment of dyslexia is based on credible science, while other sources and services are not. In this chapter, reliable informational resources, professional organizations, and services are listed to aid parents and others who care about these children in better understanding dyslexia and its potential impact on a child's development, school success, and future.

Parents know their child best. They are often the first to notice differences in their child's early development or to notice early school difficulties. Sometimes, parents readily recognize these signs as possibly being related to dyslexia, because they or someone else in their family has dyslexia. Other times, it is difficult to understand early signs or early school difficulties because the child is smart, curious, and capable at so many other activities. Children with dyslexia are just like children without dyslexia. They have unique interests, strengths, and talents. Some are great athletes, while others might be musical or artistic. Some are interested in science and nature, while others love to build, dance, or sing, or to think about becoming a fireman or an astronaut.

Children with dyslexia are children first. Dyslexia should not define who they are or limit what they can become or accomplish. With good, reliable information, parents and other family members can become an integral member of their child's support system. Parents can help their children learn; they can support their children when learning is hard, and when school becomes challenging and learning to read or spell is frustrating. Parents and families, armed with knowledge of dyslexia and available resources, can be powerful advocates for their child's learning needs and success. How you view your child is important. Be informed, be ready to educate others, and be prepared to help your child and yourself understand how best to overcome — and perhaps embrace — the challenges of learning differently.

The Colorado Department of Education does not endorse specific products, services or individuals; however, the resources listed in this chapter have been found to offer reliable information. Since it would be impossible to list all available resources here, consulting the following organizations is suggested. Each is highly regarded

as credible, each continuously updates its resources, and each offers online access to fact sheets, handbooks, articles, videos, and extensive bibliographies.

Organizations

The International Dyslexia Association.

The Rocky Mountain Branch of the International Dyslexia Association.

Understood for Learning and Attention Issues.

Books for Parents

Parents and other family members are encouraged to learn about dyslexia. The books listed below provide credible information about dyslexia and include suggestions for parents and caretakers. Parents can contact their local public library about the availability of these resources.

Overcoming Dyslexia (2004), Sally Shaywitz, M.D.

Parenting a Struggling Reader: A Guide to Diagnosing and Finding Help for Your Child's Reading Difficulties (2002), Louisa C. Moats and Susan L. Hall

Straight Talk About Reading: How Parents Can Make a Difference During Early Years (1999), Susan L. Hall and Louisa C. Moats

The Dyslexic Advantage: Unlocking the Hidden Potential of the Dyslexic Brain (2012), Brock Eide, M.D., M.A., and Fernette Eide, M.D.

The Myth of Laziness (2004), Mel Levine, M.D.

Books about Teaching Reading

The following three books offer information about reading instruction in a manner that most non-educators may find helpful**:**

Making Sense of Phonics: The Hows and Whys (2013), Isabel Beck and Mark Beck

Phonics from A to Z: A Practical Guide (2013), Wiley Blevins

Unlocking Literacy: Effective Decoding and Spelling Instruction (2010), Marcia Henry

Other Helpful Resources

American Speech-Language-Hearing Association (ASHA) offers online access to "How Does Your Child Hear and Talk?" The information will help parents learn about important speech and language developmental milestones during children's first five years and how parents can help.

The Centers for Disease Control and Prevention (CDC) has "CDC's Developmental Milestones" to help parents watch for important markers in their child's growth and development. The CDC's "Developmental Milestones" is also available in Spanish.

The Yale Center for Dyslexia and Creativity offers an extensive "What is Dyslexia" website with a range of information and resources for families, including articles such as *Ten Things to Help Your Struggling Reader*; a

section called *School Strategies*; and a section called *Success Stories*, *which contain* inspirational article about John Hickenlooper, a man with dyslexia who has served as mayor of Denver and governor of Colorado. The center's main website offers numerous other success stories about individuals with dyslexia, including current Colorado U.S. Sen. Michael Bennet, and a host of artists, designers, scientists, lawyers, doctors, and entrepreneurs. The website also offers a section on assistive technology (e.g., recording pens and voice-to-text software).

Reading Rockets offers free access to research reports, videos/podcasts, a monthly parent e-newsletter with tips, a special section titled *Helping Struggling Readers*, and reading guides for parents and teachers of young readers, including the popular guide *Teaching Reading Is Rocket Science*.

Learning Ally is a resource for parents and students who are looking for audiobooks and other information about dyslexia. Started in 1948 as Recording for the Blind (RFB), the organization changed its name to Recording for the Blind and Dyslexic (RFB&D) in 1995. In 2011, the organization changed its name to Learning Ally.

Book Share is another helpful website about free access to eBooks, with audio, highlighted text, large font and other formats.

The Colorado Talking Book Library, which is part of the Library of Congress' National Library Service (NLS) and the Colorado State Library, provides access to audiobooks for people who cannot read standard print.

The Assistive Technology Partners at the University of Colorado is a state-based resource for information and expertise in the area of assistive technology, ranging from mobility devices to learning and cognitive aids.

The Colorado Department of Education has additional links to other assistive technology websites and resources on its Resource for MTSS, RtI, Universal Design for Learning and Assistive Technology webpage

The Center for Improving Literacy offers an online website for parent and families on ways that parents can help their child learn to read and write.

5.2 Be a Wise Consumer

Unfortunately, a good amount of misinformation about dyslexia and its possible "cures" and "fixes" is offered through a host of advertising services and is found on the internet. Parents and families need to be informed consumers before they spend money on services that are neither scientifically-based nor evidence-based. Such services and programs will only take your money — and leave you and your student frustrated. Please be sure to carefully research any program, service, or individual making claims of "cures" for dyslexia, especially those that do not involve teaching your student to read and spell through an evidence-based approach.

The International Dyslexia Association devoted an entire issue of its quarterly publication *Perspectives* to the topic of *Controversial Therapies for Dyslexia.* The editor for this series of articles was Dr. Bruce Pennington, a Colorado resident and internationally recognized researcher in the area of dyslexia. This series of articles covers a range of topics, including vision efficiency therapies and movement-based interventions. As Dr. Pennington states:

> *"Ineffectual treatments for psychological and educational problems are harmful because they waste valuable time and money. Moreover, because we are making these treatment decisions for children who do not have the knowledge or judgment to make these decisions themselves, we need to meet a high standard of due diligence."*

The following link will take you to Volume 37 of *Perspectives*, and the topic, Controversial Therapies for Dyslexia*:* International Dyslexia Association publication, *Perspectives*, Volume 37, and Controversial Therapies for Dyslexia.

The IDA has an infographic about educational promises that are scams and based on false science called Beware of Education Promises Too Good to Be True! and a fact sheet titled *When Educational Promises Are Too Good to Be True*.

Learn more about becoming an advocate for your child at the National Center for Learning Disabilities' Action Center.

5.3 Resources for Students

Depending on their age, students with dyslexia are well aware that they have difficulty reading and/or understanding what they read. They may have challenges with keeping up with assignments, with organizing or prioritizing materials, with asking for or managing the extra time they will need to write a paper, or with note-taking and study strategies. There are a number of resources available that provide students with techniques and tips, as well as those that share success stories about others with dyslexia. Parents can help their children locate and use such resources, including those below.

Books for Children

All Kinds of Minds: A Young Student's Book about Learning Abilities and Learning Disorders (1992), Mel Levine, M.D.

Close to Famous (2012), Joan Bauer

Dyslexia: Talking It Through (2003), Althea Braithwaite

Fish in a Tree (2017), Lynda Mullaly Hunt

Hank Zipzer: The Greatest Underachiever (2005), a series by Henry Winkler and Lin Oliver

My Name is Brain Brian (1994), Jeanne Betancourt

Thank You, Mr. Falker (2012), Patricia Polacco

Other Resources for Students

The Yale Center for Dyslexia and Creativity, Tips from Students webpage created by students for students) offers ideas that students with dyslexia have found helpful.

In Colorado, Learning Ally offers a program called YES! which stands for Youth Examples of Self-Advocacy. Started by the Rocky Mountain Branch of the International Dyslexia Association, YES! is designed to help

students with dyslexia learn about dyslexia and self-advocacy skills, and to strengthen their self-confidence and self-esteem. YES! can be contacted through Learning Ally's YES! Program website.

Friends of Quinn, which was founded by filmmaker and author Quinn Bradlee, is an online community for older students and young adults with learning differences and is sponsored by the National Center for Learning Disabilities.

In 1998, a group of college students with learning and attention issues from Brown University sat down with similarly labeled elementary school students from Fox Point Elementary in Providence, R.I. The Brown students' project, called Project Eye-to-Eye, had one simple goal: Give these younger students hope. Today, the Eye-to-Eye program is working nationwide to establish mentoring programs where high school students with learning differences, including dyslexia, mentor similarly identified middle school students. The project has recently started sites in Colorado. Its website is Eye to Eye National.

SuperD!ville (formerly Dyslexiaville) is the first media company for kids with dyslexia and other learning differences. Its mission is to help kids succeed in school and life because of — not in spite of — their learning differences. Its series "Super d! Show" can be seen on YouTube.

For More Information

Computer-Based Information

"Information for Parents and Guardians," which is the title of Chapter 13 of the *California Dyslexia Guidelines*, offers 14 pages of ideas and suggestions for parents. Tips and activities are arranged by age and grade level and can be found on Pages 81-94. The *California Dyslexia Guidelines* can be accessed online.

Chapter 6: Support for Educators

In this chapter:

6.1 Introduction: What Teachers Need to Know and Be Able to Do

Every teacher in Colorado is likely to be a teacher of students with dyslexia. Research indicates that 12% to 20% of students fall on the continuum of reading difficulties, beginning with those who exhibit mild characteristics of dyslexia and spanning to those with significant impairments in learning to read, spell, and write. Chances are high, if not absolute, that a teacher at any grade level and in any subject area will encounter a student or students with dyslexia over the course of his or her career.

Some of these teachers will be the first to encounter preschoolers who demonstrate delays in early language development, seem oblivious to such concepts as rhyming, or struggle with speech-sound matching games. Others will be charged with the responsibility of introducing young children to formal reading instruction, while others will be responsible for delivering early intervention to those whose reading development appears atypical compared with that of many of their peers.

As these students progress, they will have teachers who will introduce them to the complexities of reading in varied genres and for different purposes and who will expect mastery of content and conceptual understanding to be evidenced through the complexities of written language. These students will be in classes with teachers who are experts in math, physics, psychology, and world history. Along the way, there will be other educators — counselors, school psychologists, speech-language pathologists, reading specialists, and special education teachers — who interact periodically or daily with these students. All of these educators will encounter students with dyslexia. At a minimum, they will need to have an awareness of dyslexia. In some instances, they will need expertise in the identification and treatment of reading and literacy-related disabilities and an understanding of the social-emotional consequences of struggling with tasks that other equally bright students do so easily.

An awareness of dyslexia allows teachers to consider alternatives to labels such as “lazy,” “unmotivated” and “showing poor effort.” It instills in them the knowledge of basic accommodations in testing formats — various ways of demonstrating mastery or extended time — that could mean the difference between academic success and failure for their students. They will be able to differentiate between accommodations that are reasonable and meaningful and those that are misguided and limited in their practicality.

All teachers need to know that dyslexia exists, that it is real; they must know how to recognize the sometimes obvious — and, at other times, subtle — characteristics and symptoms of dyslexia. Teachers without expertise in learning differences need to know which colleagues will help them in making essential adjustments and accommodations and in choosing and utilizing teaching strategies that will allow all students to learn and be successful.

This chapter will briefly introduce teachers to what an awareness of dyslexia means in the classroom, some of the important research about their role in effective instruction for students with dyslexia, and what teachers with specific responsibilities for the teaching of reading and associated literacy skills must know and be able to do. In each section of the chapter, teachers will be directed to resources and information that they may use to delve deeper into specific areas of research, evidence-based instructional strategies, or the science of reading instruction.

The National Center on Improving Literacy offers a helpful infographic and companion brief titled *What Do We Mean by Evidence-Based?*

6.2 The Research: Effective Teachers and the Science of Reading

"Research begins in wonder and curiosity but ends in teaching."

— Lee Shulman, professor emeritus at Stanford University and president emeritus at the Carnegie Foundation for the Advancement of Teaching, 2005.

Underlying the science of effective instruction is the much studied role of teachers in the delivery of high-quality instruction. Many successful adults with dyslexia, in describing their early school struggles, recall the positive effects of having parents and teachers who believed in them. Many attributes the turning point in their educational careers — after years of learning failure — to a single teacher, one who saw beyond their dyslexia and encouraged their creativity, divergent thinking, and capacity to learn, although not always in the typical manner.

Such stories should not be surprising, given what we know about effective teachers and their crucial role in academic success of their students. According to the Education Trust (2011):

> *Every child, no matter where they come from, deserves great teachers. Passionate, motivating, effective teachers are the foundation of a quality education; and a quality education opens the doors to a lifetime of opportunity.*

A landmark study released more than two decades ago on the cumulative and residual effects of teachers on future student achievement found that teacher quality impacts student achievement more than class size, per-pupil spending, and student demographics and background (Sanders and Rivers, 1996). The study summary highlighted four significant findings:

- Differences in student achievement of 50 percentile points were observed as a result of teacher sequence after only three years.

- The effects of teachers on student achievement are both additive and cumulative with little evidence of compensatory effect. (The residual effects of both effective and ineffective teachers were measurable two years later, regardless of the effectiveness of teachers in later grades.)
- As teacher effectiveness increases, lower-achieving students are the first to benefit. The top quintile of teachers facilitate appropriate to excellent gains for students of all achievement levels.
- Students of different ethnicities respond equivalently within the same quintile of teacher effectiveness.

This study and other research (Darling-Hammond, 2000; Rivkin, Hanushek & Kain, 2005) have repeatedly demonstrated that, within grade levels, the most dominant factor affecting student academic gain is teacher effectiveness. In her analysis of teacher preparation and student achievement across states, Linda Darling-Hammond reports that "measures of teacher preparation and certification are by far the strongest correlates of student achievement in reading and math, both before and after controlling for student poverty and language status." She, too, contends that measures of teacher quality are more strongly related to student achievement than are other kinds of educational investments such as reduced class size and overall spending on education.

In *Teacher Quality: Understanding the Effectiveness of Teacher Attributes* (Rice, 2003), a review of research in the area of teacher effectiveness resulted in the author stating the following:

- Teacher coursework in both the subject area taught and pedagogy contributes to positive education outcomes.
- Pedagogical coursework seems to contribute to teacher effectiveness at all grade levels, particularly when coupled with **content knowledge** [emphasis added].

Teachers engaged in working with young students learning to read, or with students of all ages struggling to learn to read and write accurately and fluently, must be masters in the content of reading and the pedagogy of reading instruction. They must be experts in using **direct and explicit instruction**, must understand how mastery is the product of frequent and distributed practice of the right skills at the right time (**Systematic, Cumulative and Sequential**), and must effectively adjust instruction based on daily formative assessment and more-formal measures of reading risk and achievement (**Diagnostic Teaching**). These are the essential instructional components of Structured Literacy. This is the pedagogy that is necessary. (See Chapter 4 for a more detailed explanation of Structured Literacy.) But pedagogy must be combined with content knowledge of reading and literacy for highly effective teaching to occur.

There is a prerequisite knowledge base for the delivery of high-quality early reading instruction and later intervention that must include a thorough understanding of reading development, linguistic concepts, and features of the English language and its spelling. This type of specialized disciplinary knowledge, referred to as "pedagogical content knowledge" by Shulman (1987), captures the combination of content knowledge and pedagogy needed to effectively teach the complex and interwoven skills of literacy. No one would argue that a secondary physics teacher doesn't need deep content knowledge of physics to be able to guide students in the creation of detailed conceptual frameworks, respond to students' inquiries, and provide nuanced clarifications – tasks that would be impossible without a deep understanding of the field of physics.

In reading, while it may be easy to assume that being a skilled reader creates sufficient knowledge for providing reading instruction, content-specific knowledge is equally essential when teaching the fundamental academic skills of reading, spelling and writing (Brady & Moats, 1997; Wong-Fillmore & Snow, 2003). There is a convincing body of empirical research demonstrating strong evidence that successful reading teachers, whether in the general education classroom or in the more specialized settings of intervention, need to have highly specialized knowledge — skills akin to those required of a physics teacher, but specific to literacy.

This research indicates that teachers of reading require domain-specific knowledge, including an understanding of the relationship between oral language and reading, knowledge of reading development, and a thorough understanding of all of the essential components of reading instruction, as well as the ability to use this knowledge in all types of educational setting with children of varying ages (Connor et al., 2005; Cunningham & Zibulsky, 2009; Foorman & Moats, 2004).

A number of research centers across the United States (Tufts University, Florida State University, Haskins Laboratories at Yale University, University of Pittsburgh, University of Wisconsin, University of Colorado, and University of Denver, just to name a few) have been studying reading intensely, including typical and atypical development. Early studies have been augmented by the use of newer technology, including PET scans and functional MRIs. As Mark Seidenberg states in *Language at the Speed of Sight*:

> *Reading is an area in which there is a large body of modern research relevant to teaching. … (The) research shows that there are better and worse theories of reading and learning, and methods that have better or worse effects on children's progress. … Practitioners have been misled about what is known and missed out on research relevant to achieving the goals they value. Their students bear the effects.*

To learn more about the science of reading, the following resources are recommended:

- Beginning to Read: Thinking and Learning About Print (1994), Marilyn Adams
- Essentials of Assessing, Preventing and Overcoming Reading Difficulties (2015), David Kilpatrick.
- Reading in the Brain: The New Science of How We Read (2010), Stanislas Dehaene.
- Watch presentations by Jack Fletcher, David Kilpatrick and Margie Gillis by following the link to the CDE dyslexia webpage.
- Children of the Code offers a series of video interviews with a range of experts in the areas of learning and reading.

Research and the subsequent "science of reading" tell us that the brains of students with dyslexia work differently from those of readers who don't have dyslexia, specifically in areas of the brain that process language (Fletcher). Research has shown that the neuropathways needed for learning to read and reading can be created and/or strengthened through appropriate instruction (Proceedings of the National Academy of

Sciences, 2012). It tells us that addressing advanced phonemic awareness skills is often the key to remediating the reading skills of students with dyslexia (Kilpatrick, 2015).

So, what content knowledge about dyslexia and reading do teachers need? Depending on the teacher's role and responsibilities for literacy development, he or she may need a solid awareness of dyslexia and other language-based learning disabilities and how these learning differences can be best handled in content area classes. The next section of this chapter is titled "An Awareness of Dyslexia." In contrast, teachers responsible for early reading and writing instruction and those charged with providing intervention for students struggling with reading will need a much deeper understanding of reading and will demonstrate expertise in the content knowledge of reading. What these teachers must know to deliver highly effective literacy instruction is discussed in Section 6.4.

6.3 An Awareness of Dyslexia

Effective teaching may be the hardest job there is.
-William Glaser

What does it mean to have an awareness of dyslexia? While you don't need to be an expert in reading or dyslexia to have an awareness of this specific learning disability, all teachers need to appreciate the signs and characteristics of dyslexia and how these characteristics may manifest differently at different ages. In Chapter 2 of this handbook, we provide a more complete explanation of how dyslexia looks at various ages. Dyslexia is frequently referred to as "an invisible disability" because there are no obvious physical features. In some instances, dyslexia is identified early in a child's life due to the severity of the problem, the family history, or the keen observation of a teacher familiar with the condition. For others, the diagnosis comes much later, after their ability to mask or to compensate for their weak reading and associated literacy skills is no longer effective.

Teachers at all grade levels and in all content areas are encouraged to take note of students who appear bright and capable but exhibit difficulty completing grade-level assignments with the accuracy or speed expected. Signs might be poor spelling, difficulty completing reading assignments on time, and test scores that don't match a student's verbal understanding of the content. A student may ask for directions to be repeated frequently, may become confused by words that "sound" similar or may complete assignments more slowly than his or her peers. Bright students with sound, higher-level math reasoning skills may struggle with the recall of basic multiplication facts, may misspell common words, may struggle to copy notes from the board accurately, or may struggle to keep pace with oral presentations.

Learning Ally has an infographic, *What is Dyslexia?,* that provides another brief overview of dyslexia.

Beyond being observant of students exhibiting characteristics and signs of dyslexia, content teachers and teachers not directly involved with the instruction of reading, need an understanding of how dyslexia may affect a student's performance in their subject area. With this understanding, the teacher can provide the support and the necessary accommodations to help the student be successful in the classroom. As an

example, the chart below shows some brief examples of the features of dyslexia that might be evidenced during a math class and what accommodations and strategies the math teacher might consider:

Observed Problem or Concern	What Accommodations or Strategies the Teacher Might Consider
Frequent errors with simple or basic calculations necessary in the completion of more-advanced problems.	Allow the student to use a calculator for basic computations embedded within high-level math tasks; provide a copy of a multiplication chart to refer to during problem solving.
Strong ability completing computational tasks and poor performance on word problems.	Consider possible accommodation for delayed reading skills by using assistive technology (e.g., providing the students with an audio version of the math textbook, using software applications that allow problems to be prerecorded).
Accuracy in completing sample problems in class, but poor transfer of the correct use of procedures, formula or sequences during independent work.	List the steps, procedures for multi-set problems and algorithms. Post clearly numbered steps in the classroom and provide the student with a personal copy of steps for problem solving. Keep sample or model problems on the board and have the student write them in a personal math journal for later reference.

The International Dyslexia Association (IDA) has a free, downloadable guide available to help teachers gain an awareness of dyslexia. This guide is called *Dyslexia in the Classroom: What Every Teacher Needs to Know*.

In Chapter 4 of this handbook, the use of accommodations, modifications, and assistive technology is highlighted. See the *For More Information* section at the end of this chapter for more resources regarding the use of accommodations and assistive technology.

6.4 Content Knowledge: The Structure of the English Language

"Those who can, do; those who understand, teach."

— Lee Shulman, professor emeritus at Stanford University and president emeritus at the Carnegie Foundation for the Advancement of Teaching (1986)

High-quality reading instruction is partially defined by the knowledge that teachers of reading must possess to provide effective instruction for their students (Snow, Burns, &Griffin, 1998; National Early Reading Panel, 2008; National Reading Panel, 2000). Writing in *The Oxford Handbook of Reading (*2015), Anne Cunningham and Colleen Ryan O'Donnell offered this insight into what teachers of reading need to know:

> *The content knowledge required for effective instruction and intervention in the United States includes knowledge of the American English spelling system. English is a morphophonemic or deep alphabetic orthography (Venezky, 1999), which means that spelling is bound by meaning as well as sound. Although its spellings map onto speech sounds quite predictably, especially for words encountered during the earliest years of reading instruction, the correspondences can be complex and variable. In order to provide explicit and complete explanations of both predictable and less predictable relationships (only some of which is caused by meaning overriding predictable sound-symbol correspondences), we argue that teachers must be knowledgeable about the complex English spelling system (Moats, 1994; Wong-Fillmore and Snow, 2003). Because decoding problems underlie the difficulties of most primary-grade students who struggle with reading (Catts, Hogan and Adlof, 2005), explicit and accurate word recognition is necessary. Instruction of sound-symbol correspondences is particularly important, as well as instruction about less predictable words that are of high frequency. Knowledge of the spelling system, along with facility in methods known to be effective in teaching it, is fundamental background knowledge for teachers.*

Teaching reading is a job for an expert. Contrary to the popular belief that learning to read is natural and easy, learning to read is a complex linguistic achievement. In 1994, Louisa Moats wrote for the *Annals of Dyslexia* an article titled *The Missing Foundation in Teacher Education: Knowledge of the Structure of Spoken and Written Language.* The article recalled the then twenty years of research supporting the finding that many beginning readers, and nearly all students with dyslexia, have difficulty with phonological awareness tasks (Adams, 1990). To be a skilled reader, one needs to appreciate that words consist of individual speech sounds that are represented by one or more letters. Today, twenty-five years after this article was published, many teachers continue to lack knowledge of English speech sounds (phonemes) or insight into how individual speech sounds are mapped onto print and how to effectively organize and teach this concept, known as the alphabetic principle, to young students.

The National Center on Improving Literacy has an infographic and literacy brief titled *The Alphabetic Principle: From Phonological Awareness to Reading Words*.

Research has included numerous studies that have involved teacher surveys of basic knowledge of phonemic awareness and English orthographic patterns. In multiple studies and surveys, teachers' lack of preservice preparation in learning and mastering these early essential instructional concepts has been demonstrated (Moats, 1994; Cunningham, Zibulsky, Stanovich et al., 2009).

The National Center on Improving Literacy has an infographic and literacy brief titled *How We Learn to Read: The Critical Role of Phonological Awareness*.

A second area of limited structural awareness for beginning and struggling readers is the awareness and understanding of the morphemic structure of words. Numerous teacher surveys of linguistic knowledge have shown this to be an area of weak conceptual understanding for teachers. In addition, studies have pointed to ineffective or weak knowledge in vocabulary development, the role of automaticity in building reading

fluency, and the effective use of comprehension strategies. In her article, Moats argued that "teachers' content knowledge is critical to successful instruction because they can choose what to teach, when, how and to whom." She listed some of the advantages of teachers having a good knowledge base of reading to include:

- Being able to interpret and respond to student errors;
- Being able to pick the best examples for teaching decoding and spelling;
- Being able to organize and sequence information for instruction;
- Being able to use morphology to explain spelling; and
- Being able to integrate the components of language arts instruction

In 1999, as a follow-up to her earlier work related to teacher knowledge, Moats wrote *Teaching Reading Is Rocket Science*, published by the American Federation of Teachers. This document remains thorough and helpful in explaining the need for better teacher training in reading.

As a result of continuing research into the correlation between effective reading instruction and teachers' content knowledge, the International Dyslexia Association convened a panel of reading experts and researchers and established *Knowledge and Practice Standards for Teachers of Reading* in 2010 with the intent to concretely establish the specifics that comprise the necessary content knowledge for teachers of reading. The Knowledge and Practice Standards for Teachers of Reading were revised in 2018 as a result of the continuing evidence that "the majority of practitioners at all levels have not been prepared in sufficient depth to prevent reading problems, to recognize the early signs of risk, or to teach students with dyslexia and related learning disabilities successfully" (IDA, 2018).

The IDA's 2010 set of Knowledge and Practice Standards for Teachers of Reading was used to inform the updates to the Colorado Elementary Education Teacher Endorsement in 2016 to ensure alignment with both the Colorado Academic Standards and the Reading to Ensure Academic Development Act (READ Act). View the CDE's Elementary Teacher Literacy Standards document for more information.

6.5 Preservice, In-Service and Professional Development

Effective classroom instruction delivered by a knowledgeable teacher, especially in the early grades, can prevent or at least effectively address and limit the severity of reading and writing problems.

— Knowledge and Practice Standards for Teachers of Reading (IDA, 2018)

Although the difficulties experienced by students with dyslexia may originate from neurobiological differences of genetic or non-genetic origin, the most effective treatment for these students (and all students who struggle with acquiring literacy skills) is effective instruction provided by skilled teachers. As a result of current knowledge about effective instructional practices, teacher effect, and the science of reading development, we

know it is critical that teachers and other educators have access to accurate and current information about evidence-based instructional strategies and the content knowledge underlying them.

> *A large body of research evidence shows that with appropriate, intensive instruction, all but the most severe reading disabilities can be ameliorated in the early grades, and students can get on track toward academic success. For those students with persistent dyslexia, who need specialized instruction outside the regular classroom, competent intervention from a specialist can lessen the impact of the disorder and help the student overcome and manage the most debilitating effects. — IDA, 2018*

Learning to teach reading and related literacy skills is complex and challenging. In Chapters 1 and 4 of this handbook, the specific content of high-quality reading instruction has been identified. The Structured Literacy approach is characterized by the explicit and direct instruction that incorporates all components of literacy (listening, speaking, reading and writing) and emphasizes the structure of the language. These structures include the speech sounds (phonology), the writing system (orthography), the structure of sentences (syntax), the meaningful part of words (morphology), the relationship among words (semantics), and the organization of spoken and written discourse.

As outlined in the IDA's Knowledge and Practice Standards, teachers need in-depth knowledge of the structure of the sound and meaning aspects of the language. They need deep understanding of what phonology is and how it is taught. They must be experts at isolating individual speech sounds, counting speech sounds in words, and understanding the developmental progression of phonological awareness in early childhood. They need to demonstrate competence in English spelling and how speech sounds are mapped onto specific letters or letter combinations. Teachers will need a solid grasp of morphology and how to determine the meaningful part of words. This is just a short list of what effective teachers of reading must know before they can begin to teach these concepts to children.

Investigative studies have suggested that if preservice teachers are provided with focused instruction and the opportunity to acquire this basic foundational knowledge of English-language structures, they would be able to use this knowledge as they are developing expertise in individual interventions and classroom reading instruction during their preservice fieldwork and during in-service and induction training early in their professional careers, where expert mentoring and coaching are offered (Spear-Swerling & Brucker, 2004; Ness & Southall, 2010).

In addition, preservice teachers need to have foundational knowledge of how typical reading skills develop and what types of reading challenges they are likely to encounter in their future classrooms. Preservice courses need to prepare teachers to assess their students' progress and make adjustments when progress is not meeting expectations. With this knowledge and an understanding of the administration of validated reading assessments and the interpretation of the results, teachers will be prepared to readily identify students at risk for reading failure.

Literature and research about effective schools offer solid evidence of what else and who else must be involved in the consistent delivery of highly effective, comprehensive literacy instruction for all students, including those with dyslexia. Master instructional schedules that ensure adequate time for instruction separate from the time devoted to interventions must be created. Schools need to value time for collaboration among teachers and their educational colleagues and align professional learning opportunities

to further develop expertise in reading instruction and intervention. Teachers need access to mentors and coaches as they gain enhanced skills and increased confidence in their teaching.

Research into effective schools consistently identifies strong school leadership as an essential element leading to positive outcomes for children. The principal's role as an instructional leader is crucial. Principals need deep knowledge of learning and evidence-based instruction. They need comprehensive knowledge of reading development, atypical reading development, the structure of language and reading instruction, and interventions. Also, they must understand the use of data to inform instruction and be prepared to provide teachers with high-quality in-service and professional development opportunities.

6.6 Resources for Instructional Leaders, Teachers and Other Educators

The National Center on Improving Literacy offers a number of resources for educators. One such resource is highlighted below:

Succeeding in School: Essential Features of Literacy Development, an infographic and companion literacy brief

The Center on Response to Intervention offers resources for teachers regarding the use of RtI procedures and progress monitoring.

The Reading League offers a list of Decodable Text sources.

The Barksdale Institute offers free access to the Reading Universe, an interactive grid with teaching strategies and videos.

The Cognitive Foundations of Learning to Read: A Framework, originally created by SEDL, is now available at the SEDL Archives at the American Institute for Research.

The Florida Center for Reading Research (FCRR) hosts a website for teachers with numerous classroom resources.

The University of Texas at Austin/Meadows Center for Preventing Educational Risk: Vaugh-Gross Center for Reading and Language Arts offers access to research and materials developed at the center.

The Yale Center for Dyslexia and Creativity hosts a website with resources for educators and parents.

The Neuhaus Center, a nonprofit center in Texas, is a resource for teachers and families. It generously shares a number of its resources online, including consumables and videos.

The Center for Effective Reading Instruction (CERI), founded by the International Dyslexia Association and accessible online and, can be contacted for information about teacher-training programs and certifications.

Tools4Reading was created by Mary Dahlgren, Ed.D. It offers teachers free access to many K-3 classroom resources.

For More Information

Computer-Based Information

Reading Rockets offers information for teacher, principals, school psychologists and other school professions on its website.

View Video

The Children of the Code website, offers access to video interviews with experts in reading, neuroscience and learning.

Visit the University of California MIND Institute YouTube video Brain Imaging Studies of Reading and Reading Disability and learn about reading and brain imaging from Dr. Guinevere Eden of Georgetown University Medical Center.

Books and Print Information

For those who wish to read something that is more in depth, the following books are a suggested:

Essentials of Assessing, Preventing, and Overcoming Reading Difficulties (2005), David Kilpatrick

Handbook of Language and Literacy (2014), Addison Stone, Elaine Silliman, Barbara Eden and Geraldine Wallach, editors

Language at the Speed of Sight (2018), Mark Seidenberg

Multisensory Teaching of Basic Language Skills Activity Book, *Fourth Edition* (2019), Suzanne Carreker

Multisensory Teaching of Basic Language Skills, Fourth Edition (2019), Judith Birsh and Suzanne Carreker

Oxford Handbook of Reading (2012), Alexander Pollatsek and Rebecca Treiman, editors

Speech to Print Workbook, *Second Edition* (2011), Louisa C. Moats

*Speech to Print, Second Edition (*2010), Louisa C. Moats

Teaching Word Recognition (2014), Rollanda O'Connor

The ABC's and All Their Tricks (2006), Margaret Bishop

Unlocking Literacy, *Second Edition* (2010), Marcia Henry

Chapter 7: Special Populations and Comorbidity with Dyslexia

In this chapter:

"Clearly, dyslexia knows no boundaries, neither geographic nor ethnic nor intellectual." — Sally Shaywitz, M.D., in Overcoming Dyslexia (2003)

7.1 Introduction: What Are Special Populations?

All educators are aware that there are students who need particular attention, who have specific challenges or who have needs that require specialized instruction. Although we view each student as an individual with unique characteristics, we sometimes refer to a group of students with similar challenges as a "special population."

Dyslexia is found in all student populations and in people within all cultures and languages. In this chapter, the information provided will initially center on the occurrence and identification of dyslexia among two specific populations of students: English Learners and students identified as gifted. In the final section of this chapter, we will discuss the issue of comorbidity, which is the coexistence of dyslexia with one or more other identified conditions (e.g., dyslexia + attention deficit hyperactivity disorder; dyslexia + anxiety).

It is important in the identification and diagnosis of dyslexia that other potential contributing factors to reading failure be eliminated or understood in their relationship to dyslexia. An obvious example is to assess a student's hearing and visual acuity in order to rule out a sensory deficit as the underlying cause of reading difficulties. Likewise, when diagnosing dyslexia, the evaluation needs to be comprehensive enough to know whether there are other factors, in addition to dyslexia, that may hinder a student's growth and development of reading. Similarly, additional factors that may complicate or mask the identification of dyslexia must be considered. Among these latter factors are issues of language development in students whose first language was not English and the identification of dyslexia in students who have been identified as gifted.

7.2 English Learners and Dyslexia

Dyslexia exists all over the world and in all languages. However, identifying dyslexia in students who are English Learners (ELs) is challenging. It is never appropriate to simply assume that a student is struggling with reading because they are not a native English speaker or that his or her reading and spelling problems are solely the result of struggles with a new language. Dyslexia is an equal opportunity reading problem, and students who are learning English are just as likely to have dyslexia as their native English speaking peers.

Studies have shown that ELs with reading disabilities are identified far later than their English-only peers, and this greatly impacts their ability to achieve their potential (McCardle et al., 2005). However, there is also compelling research that ELs are often misplaced into special education programs and actually have no disability (Gallego et al., 2006; Ortiz et al., 2011). In both instances, the underlying cause of under-identification for some students and over-identification for other students is the lack of understanding about how second-language acquisition takes place and limited consideration for students' cultural and linguistic backgrounds (Bastera, Trumbull, & Solano-Flores, 2011; Hoover and Klingner, 2011; Ortiz et al., 2011; Hoover and Erickson, 2015).

The characteristics of a learning disability (LD) and second-language acquisition can appear quite similar. This makes the process of identifying a learning disability such as dyslexia exceptionally challenging in this special population of students. The Colorado Department of Education has organized a list of critical questions to be answered when it is necessary to consider the relationship of culture and language to a possible educational disability such as dyslexia. The entire document, *Critical Questions Regarding the Special Education Process for Culturally and/or Linguistically Diverse Learners*, highlights the following questions:

Before a formal referral is made to special education, ask:

Is this an appropriate referral? Have we answered the following questions satisfactorily?

- *Has the student had appropriate support, structure, instruction for sufficient time, with enough intensity, to acquire necessary language, academic, and behavioral skills?*
- *Have we used appropriate accommodations in the classroom?*
- *Have we considered the child's academic history and personal experiences?*

Before beginning the assessment process, ask:

Have we considered the important factors to design the assessment?

- *What do we already know? What do we want to learn?*
- *What are the English language skills of this student? How do we know?*
- *Which informal tools will be useful? Who will use them?*
- *Are there appropriate tests in this child's native language? Are the norms appropriate? Does the child require the tests in his/her first language?*
- *If we use an interpreter, who will he/she be? Does he/she have the appropriate level of technical language to be able to correctly interpret the assessment? Has he/she been trained in the special education assessment process and interpreting procedures?*
- *Have parents received notification of rights and procedural safeguards in a language they understand?*

Before determining eligibility for special education, ask:

Do we have sufficient, unbiased information to make a decision?

- *Can cultural or linguistic factors be ruled out as a primary cause of the student's difficulties?*
- *Can we document that there is a disability (most likely without the use of standardized test scores)?*
- *Does the student need special education services to benefit from the general education curriculum?*
- *Will parents need an interpreter for the staffing?*

It is obvious from the nature of these questions that those responsible for assessing English learners for possible learning disabilities/dyslexia need to have comprehensive knowledge of language development, the acquisition of a second language, early reading development, and reading disorders, as well as a thorough knowledge of assessment tools available to them. A bilingual evaluator who speaks the student's first language, as well as English, is invaluable to the process. This dual-language ability not only allows the evaluator to administer assessment measures in either language or both languages, but it also enhances the interpretation of results due to his/her knowledge of how the structures and pragmatics of the two languages are similar and different.

The CDE's most current *Guidebook on Designing, Delivering and Evaluating Services for English Learners (ELs)* can be found at the Colorado Department of Education' ELD Guidebook webpage.

Since dyslexia falls within the learning disability category, a student must meet the basic criteria for having a specific learning disability (SLD). (See Chapter 8: Dyslexia and Legislation for more information.) The formal definition of SLD precludes students whose learning problems are primarily the result of cultural factors or limited English proficiency. However, either or both of these factors may coexist with an appropriate identification of SLD and a student cannot be automatically excluded from consideration for special education based on the existence of one or both of these factors.

The CDE's technical assistance document *Cultural and/or Linguistic Diversity & Specific Learning Disability* can be found at the CDE Specific Learning Disability Resource webpage under Cultural/Linguistic Diversity Resource Area.

Because dyslexia is found in all languages and because the root causes of dyslexia (phonological processing) and the key skills involved in word reading (letter-sound knowledge, phonic decoding, recognition of orthographic patterns) are the same among all languages with an alphabetic orthography, the assessment of dyslexia for the vast majority of ELs in Colorado will focus on these root causes and key skills. The evidence suggests that the best predictor of phonological awareness and word reading development is a student's phonological awareness and word reading development in their first language (Kilpatrick, 2015).

Like all students suspected of having dyslexia, the English learner's ability to manipulate speech sounds (phonological awareness) will need to be assessed. A bilingual diagnostician can assess the student's phonology skills in his or her native language, or, if necessary, this can be done in English. However, for ELs learning to read in English, phonological awareness can be especially challenging when the student's native language does not include some English phonemes (Antunez, 2002). In *Why English Learners Struggle with Reading: Distinguishing Language Acquisition from Learning Disabilities*, the authors described this in specific detail:

> *For example, most dialects in Spanish do not include "sh" or the short vowel sound for "i". When this happens, the student is not accustomed to hearing these sounds, and it can be quite difficult for them to distinguish them from other sounds. Pronouncing the new sounds can be tricky for the student as phonological tasks in general become more challenging. If teachers are not aware of these challenges, they might assume the child has a deficit in auditory discrimination and/or in phonological awareness. Since these can be early signs of a learning disability, the potential for misunderstanding is great and teachers need to remember that some confusion about and the difficulty with sounds is a natural byproduct of learning a second language.*

If the student has received formal schooling in his or her native language, the signs of dyslexia will be apparent in an assessment of reading and spelling in the first language. It is here that the evaluator needs to appreciate the differences between languages. In languages with more transparent or consistent orthographies (e.g., Spanish), dyslexia will be most apparent in the student's speed of decoding and reading, and less about decoding accuracy. When evaluating reading skills in students who have not consistently attended school or who are too young to have received formal reading instruction in their first language, the assessment will need to be completed in English and within the context of each student's level of English acquisition.

Through the use of a Response to Intervention (RtI) process, where instructional time is increased and intervention is intensified, the rate of improvement and intensity of instructional need can be assessed prior to any formal evaluation. As evidence of progress or lack of progress is collected, an interventionist can add valuable observational data to the process. This interval of increased intensity of instruction is a valuable component in the type of dynamic assessment process that is likely to yield the best information about the student's language and learning needs, leading to the best instructional plan.

What is key is that ELs need *explicit instruction* — explicit instruction in language and explicit instruction in reading. Although there certainly are many similarities in the best instructional practices for ELs and for students who speak English as their first language (Klingner et al., 2006), there are also key differences. While the five components of reading, as identified by the National Reading Panel, are the same essential components of reading for ELs, what matters is the way instruction is adjusted to benefit ELs.

7.3 Twice-Exceptional Students (Gifted + Dyslexia)

Sometimes, students identified with dyslexia exhibit incredible strengths in other academic or non-academic domains and are identified as gifted. These students' reading challenges are not only unexpected, as described in the formal definition of dyslexia (See Chapter 2: What is Dyslexia?), but are vastly different from their overall ability.

Accordingly, the CDE's technical assistance guidance on twice-exceptional students states:

> *Twice-exceptional students are difficult to identify because they possess the characteristics of gifted students and the characteristics of students with disabilities. Gifted characteristics may mask disabilities, or disabilities may mask gifted potential. Either the strengths, the disabilities, or both may not be identified.*

The difficulty in the identification of such students makes it especially critical for this special population and their unique needs to be specifically highlighted in this handbook. Twice-exceptional (also called 2e) students can use their strengths to compensate for their reading challenges, and both their dyslexia and giftedness can be missed.

Twice-exceptional students are those who are both:

- Identified as gifted, according to state criteria in one or more of the categories of giftedness (general intellectual ability, specific academic aptitude, creative and productive thinking, leadership ability, or arts ability), and
- Identified with a disability, according to federal and state criteria — and the disability qualifies them for either an IEP or a Section 504 plan. (See Chapter 8: Dyslexia and Legislation for a fuller explanation of these documents.)

For more information, use the following link to the CDE's Twice-Exceptional Students: Gifted Students with Disabilities Resource Book, Level 1.

Gifted students with dyslexia sometimes become doctors, lawyers, artists or leaders. Other gifted students with dyslexia underachieve because neither their dyslexia nor their giftedness is identified. Still other gifted students with dyslexia sometimes become frustrated and, feeling markedly misunderstood, drop out of school and never realize their potential. Gifted students with dyslexia are at risk because their educational and social-emotional needs often go unnoticed or, in some instances, are misinterpreted. They may be labeled as "unmotivated" or "lazy" when their academic work is far below their perceived ability.

As with all students identified with dyslexia, it is essential that the identification and evaluation process be comprehensive, allowing for a thorough understanding of the whole individual — not just their weaknesses, but also their strengths. Early identification is important for this special population of students, as it is for all students with dyslexia, since reading challenges and teachers' misperceptions about students' capabilities and efforts can take a significant toll on twice-exceptional students' belief in their abilities and strengths.

Just as dyslexia is commonly misunderstood (see Chapter 2.2: Common Myths About Dyslexia), there are a number of myths associated with twice-exceptionality. For example, some people claim that dyslexia is really a gift, and that all individuals with dyslexia are exceptional artists or entrepreneurs. This is truly a myth. Students with dyslexia are just like people without dyslexia. They have a broad range of abilities, varied strengths, interests, and talents. Myths about gifted students' ineligibility for accommodations, individual education programs (IEPs) or support services are common.

Understood.org has a fact sheet titled *7 Myths About Twice-Exceptional (2E) Students* available on their webpage.

Research indicates that 2% to 5% of the gifted population will have disabilities and that 2% to 5% of students with disabilities will be gifted (Dix & Shafer, 1996; Whitmore, 1980; Maker, 1977). It is important to identify gifted students with dyslexia early. A lack of identification and dual support for both their giftedness and dyslexia can lead to emotional and behavioral issues. These twice-exceptional students, just like other nongifted students with dyslexia, may have other co-occurring condition(s) such as attention-deficit/hyperactivity disorder (ADHD), anxiety or depression. (See Section 7.4, which addresses comorbidity.)

Like all students with dyslexia, those identified as being twice-exceptional will benefit from a comprehensive evaluation that is designed to identify the student's learning challenges and strengths, and address the specific type of instruction, support, strategies, and accommodations needed to address the student's dyslexia, as well as the support and strategies needed to support the student's giftedness. Just as other students with dyslexia benefit from a structured literacy instructional approach, so will those who are identified as 2e. As a result of their giftedness, these students may need instruction at a faster pace or with more depth and complexity. Accommodations such as access to audiobooks or voice-to-print technology will allow them to successfully participate in more-advanced and more-rigorous courses in which content is aligned to their capacity for complex thinking and their overall learning abilities.

For more information regarding program supports, strategies, and accommodations use the following link to the CDE's resource book *Twice-Exceptional Students: Gifted Students with Disabilities, Level 2, Establishing an Educational Plan Through a Collaborative Problem-Solving Model*.

7.4 The Role of Comorbidity in the Identification and Treatment of Dyslexia

It is not uncommon for students with dyslexia to also be diagnosed with other disorders or conditions. Many parents and teachers are probably aware of the number of students who have been diagnosed with ADHD and dyslexia. This co-occurrence of two or more different disorders in the same individual is called comorbidity. A more formal definition of comorbidity is when "two or more disorders co-occur more often that we would expect by chance" (Pennington, 2006; Kain, Landerf & Kaufmann, 2008). Comorbidity is another important factor and consideration in the identification and treatment of dyslexia.

Research in medicine and the neurosciences have shown that attention deficits and dyslexia are frequent comorbid conditions. Current research suggests that approximately 20% to 40% of children with the inattentive subtype of ADHD have reading problems (Wadsworth, Defries, Willicutt, Pennington, & Olson, 2015; Sciberras, Mueller, Efron, Bisset, Anderson, Schilpzand et al., 2014) and that 20% to 40% of children diagnosed with reading problems have been found to also have ADHD (Germano, Gagliano & Curatolo, 2010). Sally Shaywitz has stated that "between 12 percent and 24 percent of those with dyslexia also have ADHD" (Shaywitz, 2008).

Research does not always differentiate between the term "reading disorder" (RD) and dyslexia. This may account for the inclusion of some students with reading difficulties in these studies, even when the origin of their reading struggles may not be dyslexia. While there is a body of research regarding the co-occurrence of dyslexia and autism spectrum disorders (ASD), many of the reported reading disorders associated with ASD are quite different from dyslexia and involve primary difficulties with reading comprehension as a result of the broader language and communication aspects of ASD. However, in much of the current research, the common overlapping deficits named in studies about the relationship between reading disorders and ADHD include naming speed and phonological short-term memory, which are common characteristics of dyslexia.

Current research suggests that the relationship between ADHD symptoms and reading is found to be predominantly in the inattentive type of ADHD rather than in the impulsive-hyperactivity subtype (Hendren, Haft, Black, Cushen-White, & Hoeft, 2018). The research on comorbidity between dyslexia and ADHD is extensive, probably due to its common occurrence. Phonics-based instruction that is systematic and explicit has the greatest evidence of being effective in the treatment of dyslexia. Such reading interventions for students with both dyslexia and ADHD have been shown to be effective regardless of medical intervention for the treatment of ADHD. While medical treatment for ADHD symptoms is effective in the reduction of these symptoms, research does not show that treatment for ADHD alone led to greater improvements in reading (Tamm, Denton, Epstein, Schatschneider, Taylor, Arnold et al., 2017).

Watch the Understood.org video "*Why Do ADHD and Dyslexia Co-Occur So Often?*", featuring Fumiko Hoeft, M.D., Ph.D., on YouTube

Research in other comorbid conditions with dyslexia, especially those that are often identified in school settings, is also frequently reported. These other academic-based, co-occurring disorders tend to be other specific learning disabilities, specifically in the areas of mathematics and written language. While it is known that students with dyslexia often exhibit discrete difficulties with math — such as poor recall of basic math facts or difficulties in aligning numerals within columns — significant delays in mathematics could be more related to dyscalculia, a specific math disorder/learning disability. Reading disorders and dyscalculia have a comorbidity of approximately 40%, according to a recently completed study (Wilson, Andrews, Struthers, Rowe, Bogdanovic & Waldie, 2015).

Watch the brief Understood.org video *Is There a Dyslexia Gene or a Dyscalculia Gene? on Youtube.*

Reading disorders have also been shown to co-occur with dysgraphia (writing). The correlation of word reading and writing performance is shown to be around 70%, although a specific rate of actual comorbidity is unknown (Ehri, 2000). Many researchers will explain the overlap of dysgraphia and dyslexia by noting the reciprocal relationship between learning to read and learning to spell. While disordered spelling can significantly impact written communication, the broader issues with both the physical aspects of writing (handwriting and recall of letter formation) and the broader language aspects of syntax and written expression are often symptoms of a specific learning disability in written language (dysgraphia). (See Chapter 8: Dyslexia and Legislation for more information.)

Use the following links to resources from the International Dyslexia Association and Understood.org to learn more about dysgraphia: *Understanding Dysgraphia* & *Dysgraphia: What You Need to Know*

The other most commonly reported comorbid conditions with dyslexia are related to mental health and are psychological in nature. These types of comorbid conditions come in two broad categories: internalizing mental health problems and externalizing mental health conditions. Internalizing conditions are inward-facing difficulties that occur in an individual and tend to not be overtly obvious to others, while externalizing problems involve more-apparent acting out within the environment and are outward facing.

In Chapter 4, research related to the comorbidity of dyslexia and depression, anxiety, and social-emotional well-being was mentioned, as was the fact that those with dyslexia are reported to have these types of internalizing conditions on the order of two to five times greater than their non-dyslexic peers (Wilson et al., 2009). Students with dyslexia report greater generalized anxiety than their peers without dyslexia, even after controlling for ADHD symptoms (Nelson & Harwood, 2011; Goldston, Walsh, Arnold, Reboussin, Daniel, Erkanli et al., 2007). However, there is little research that would help distinguish generalized anxiety from anxiety specific to reading (reading anxiety).

In addition to comorbidity with anxiety, students (children and adolescents) with dyslexia exhibit higher rates of depression (Mammarelli, Ghisis, Bomba, Caviola, Broggi et al., 2016; Mugnaini, Lassi, La Malfa & Albertin, 2009). There is evidence for a correlation between severe dyslexia and greater depression in younger children (Maughan, Rowe, Loeber & Stouthamer-Loeber, 2003). Like research on the comorbidity of anxiety and reading problems, the existence of depression with dyslexia does not link to comorbidity with ADHD (Carroll, Maughan, Goodman & Meltzer, 2005).

Students with dyslexia also can exhibit externalizing mental health issues as comorbid conditions. These include behaviors associated with impulse control, conduct disorders, and oppositional defiant disorders. It is not clear, however, how much of the higher incidence of externalizing behaviors among students with reading disorders precedes the reading problem or is the emotional result of it. Research is incomplete in documenting any causal relationship between dyslexia and specific conduct disorders. Evidence that behavioral problems demonstrated by students with dyslexia occur across academic and nonacademic settings suggests that externalizing mental health issues are somewhat independent of reading problems (Kempe, Gustafsonn, & Samuelsson, 2011). Current trends in research suggest the possible explanation of the co-occurrence of dyslexia and behavioral disorders is each condition's comorbidity with ADHD. ADHD commonly occurs with dyslexia, conduct disorders, and oppositional defiant disorder (Levy, Young, Bennett, Martin & Hay, 2015).

Our current understanding of comorbidity further promotes the recommendation of comprehensive and thorough evaluation of students with dyslexia. When a student receives a diagnosis of dyslexia or ADHD, it is very important to complete further assessment to determine the existence or nonexistence of other commonly occurring/comorbid conditions. When students are found to have comorbid conditions that can affect learning, a multimodal treatment plan is considered optimal. Unrecognized comorbidities can result in interventions that are not adequately specific to the student's profile of learning challenges and needs.

For More Information

English Learners

Computer-Based Information

CDE has a technical assistance document titled *Dynamic Assessment*, available through the Office of Special Education.

View Video

Understood.org has a video titled "Diagnosing Dyslexia in English Language Learners," which is available on YouTube.

Books and Print Information

A must-have book on the topic of ELs and dyslexia is *Why Do English Learners Struggle with Reading: Distinguishing Language Acquisition from Learning Disabilities, Second Edition* (2016), by John Hoover, Leonard Baca and Janette Klingner.

The *Handbook of Language and Literacy-Development and Disorders, Second Edition* (2014) offers specific chapters addressing such topics as bilingualism, biliteracy, and instructional practices for English Learners.

Twice-Exceptional

Computer-Based Information

A list of resources for parents of twice-exceptional students can be found on the CDE Office of Gifted Education, technical assistance document, *Twice-Exceptional Students: Gifted Students with Disabilities*.

The IDA has a fact sheet titled *Gifted and Dyslexic: Identifying and Instructing the Twice- Exceptional Student* This fact sheet includes suggested readings.

The CDE has a technical assistance document titled *Gifted and Specific Learning Disability (Twice Exceptional)*, available on the CDE Specific Learning Disability Resources for Eligibility and Guidance webpage.

View Video

Learning Disabilities Expert Advice: How Can Parents Advocate To Support Their Child's Giftedness? is a helpful video, created by the National Center on Learning Disabilities. This video is for parents of twice-exceptional students.

"Her Dyslexia and Its Advantages," a video about MIT professor Catherine Drennan, is available at on YouTube.

The video "From Dyslexic Struggling Reader to Valedictorian" is available on YouTube.

Jonathan Mooney, who graduated from Brown University with an honors degree in English literature, is a writer and activist with dyslexia who did not learn to read until he was 12 years old. View his TEDx Talk "Making different Count" on YouTube.

Fumiko Hoeft, M.D., Ph.D., presents a Ted Talk titled "Dyslexia, Learning Differently, and Innovation," available at YouTube.

Comorbidity

Computer-Based Information

Understood.org has an infographic "ADHD and Co-Occuring Issues by the Numbers", provides a breakdown of numbers of learning issues that are co-occurring with ADHD.

The article "Social Anxiety and Attention Issues: What You Need to Know" is available for parents at Understood.org.

View Video

Headstrong Nation, a California nonprofit founded by Ben Foss, offers a video called "Inside the Hidden World of Dyslexia & ADHA" It can be viewed on YouTube.

Chapter 8: Dyslexia and Legislation

In this chapter:

8.1 Introduction to Legislation Related to Dyslexia

This chapter is devoted to a review of legislation relevant to identification, services, and supports for students with dyslexia. Attention is paid to both federal and state legislation, as well as to the impact of rule and law on advocacy and resources for those with dyslexia and their families.

- Please note that the phrases in brackets in the following section were added to help clarify certain acronyms or terms used in the letter and were not part of the original document

In October 2015, the federal Office of Special Education and Rehabilitative Services (OSERS) published a Dear Colleague: Dyslexia Guidance letter offering guidance to state and local agencies on the "unique educational needs of children with dyslexia, dyscalculia, and dysgraphia" (OSERS, 2015). Although these conditions fall under the special education eligibility criteria of specific learning disability, the purpose of the letter was "to clarify that there is nothing in the IDEA [Individuals with Disabilities Education Act] that would prohibit the use of the terms dyslexia, dyscalculia and dysgraphia in IDEA evaluation, eligibility determinations, or IEP [Individual Education Program] documents."

The OSERS letter also noted that "there could be situations where an IEP team [student's parent(s) and the team of qualified professionals responsible for determining whether the student has a specific learning disability] could determine that personnel responsible for IEP implementation [special education teachers, classroom teachers and support services staff] would need to know about the condition underlying the child's disability (e.g., that a child has a weakness in decoding skills as a result of the child's dyslexia)."

The letter "reiterates that there is nothing in the IDEA or our implementing regulations that would prohibit IEP Teams from referencing or using dyslexia, dyscalculia, or dysgraphia in a child's IEP." The letter also stated that "OSERS further encourages States to review their policies, procedures, and practices to ensure that they do not prohibit the use of the terms dyslexia, dyscalculia, and dysgraphia in evaluations, eligibility, and IEP documents."

Since dyslexia is not one of the educational disability categories specified in federal or state law, a student with dyslexia is most likely to be identified with a specific learning disability if they meet eligibility requirements for special education services. (See Section 8.3 Federal Legislation for more information on determination of eligibility.) **However, there is nothing in Colorado law or rules that prohibits the use of the terms dyslexia, dyscalculia, or dysgraphia in any evaluation reports, special education eligibility documents, IEPs, or interventions plans.** Here are two examples: "Joy has dyslexia, a specific learning disability,

characterized by poor decoding and encoding skills." "Wanda was seen by a private neuropsychologist who diagnosed mild dyslexia. Wanda's READ Plan should include focused intervention for her identified phonemic awareness deficits that were also evidenced during READ Act screening."

The term or descriptor "dyslexia" can be best used appropriately when:

- There is a need to delineate the specific type of learning disability in reading from other, less-specific learning problems in order to provide more-focused intervention.
- The more specific descriptor can help describe the student's specific learning strengths and convey specific instructional needs (e.g., specific phonological processing weaknesses that require intervention in addition to reading, spelling, and/or writing instruction.
- The use of the term captures a cluster of features common to dyslexia and can lead to more-informed use of evidence-based instructional strategies found to be effective in the treatment of dyslexia (e.g., Structured Literacy).

In June 2017, the National Center for Learning Disabilities (NCLD) published *5 Questions Parents and Educators Can Ask to Start Conversations About Using Terms Like Learning Disabilities, Dyslexia, Dyscalculia and Dysgraphia, available on the NCLD website.*

In the next sections of this chapter, state legislation related to the identification of early risk for reading failure — as well as federal special education and civil rights legislation will be reviewed.

8.2 State Legislation

In Chapter 3, universal screening for reading risk was discussed. Universal screening applies to all students and involves the use of short, targeted assessment of skills known to be predictive of future reading success or failure. Colorado's Reading to Ensure Academic Development Act (READ Act) requires universal screening for all students in grades K-3.

Colorado's READ Act, adopted by the state legislature in 2012, focuses on early literacy development for all students in grades K-3, especially for students at risk of not reading at grade level by the end of third grade. The Colorado READ Act was amended during the 2018 legislative session. Colorado Read ACT Revised Statute can be accessed on the CDE Colorado READ ACT webpage.

The READ Act requires that *all* students in grades K-3 be screened for reading risk. Colorado has identified seven screening tests, commonly referred to as interim assessments, found on the CDE READ Interim Assessments webpage, that schools can use to determine whether students are meeting grade-level proficiencies or whether they show evidence of being at risk for reading failure. In addition to these interim assessments, the CDE has developed a Differentiated Pathways process. The process allows students with special needs and who require assessment adaptation and/or accommodations to be screened. Information regarding Differentiated Pathways and Students with Disabilities is available on the Colorado READ Act webpage, under resources.

The READ Act's Minimum Reading Competency Skills serve as the guide for the end-of-the-year skills necessary to indicate a student is on track for acquiring basic grade-level reading skills. Minimum Skill Competencies for grades K-3 can be on the Colorado READ Act Resources webpage, under READ Act Tools & Resources. There the Minimum Skill Competencies can be viewed individually by grade level or in a matrix that shows the skills progression through the early grades

During the universal screening process as established by the READ Act, students who are found not meeting grade level expectations and scoring below established cut-points on the interim assessment used by their school or district are identified as having a "significant reading deficiency" (SRD). This term is not meant to denote a specific reading disability, such as dyslexia, but it is used to categorize students found to be at risk. Once a student is identified as having an SRD, the READ Act requires that an intervention plan — a READ Plan — be developed for the student. While the law outlines specific components that must be included in the READ Plan to ensure the effectiveness of the intervention strategies, each READ plan must also be tailored to meet the individual needs of each student. The CDE has a number of helpful documents (e.g., READ Plan checklist, READ Plan sample) that can be accessed online on the Colorado READ Act Resources webpage.

Throughout the READ Plan implementation process, decisions about instruction and intervention should be made in collaboration with the student's parents. Parents should receive regular, ongoing updates from their student's teacher about his or her reading progress after participating in the required reading intervention. The student's teachers must review the READ Plan annually to determine whether, after intervention, the student meets grade level minimum competencies or whether the plan requires updating or revision to accelerate progress toward meeting grade-level reading competencies. Although READ Plans are established during grades K-3, a READ Plan remains in place until the student achieves grade level reading competency.

It is important for the school to be aware of factors that may be early indicators of risk for dyslexia when they are determining what type of intervention will be used to meet the requirements of a READ Plan. A family history of dyslexia, a private assessment of early language skills or early reading skills that identifies concerns, or the student's history of early language delay or difficulties are examples of factors that may elevate the degree of "risk" for a specific student and lead to the provision of an evidence-based intervention that is especially effective for students with dyslexia.

8.3 Federal Legislation

There are two categories of federal legislation that may have an impact on a student identified with dyslexia. The first category pertains to special education law, and the second category is civil rights law. In this section, the Individuals with Disabilities Education Act (IDEA), the primary legislation regarding the provision of special education, will be reviewed first. This legislation requires certain, specific actions be taken by states in the provision of special education services. The Exceptional Children's Education Act (ECEA) delineates the specific rules for the administration of special education services in Colorado. Next, Section 504 of the Rehabilitation Act of 1973 will be reviewed. Section 504 is civil rights legislation that protects students with disabilities from discrimination based on disability.

Special Education

Special education provides specially designed instruction and related services — at no cost to the parents — to meet the unique learning needs of students whose educational needs cannot be adequately met with accommodations and modifications within the general education instructional program.

A student with dyslexia does not necessarily require special education services and is not automatically eligible to receive special education. Eligibility for special education placement is based on the completion of a prescribed set of procedures that are initiated after a referral for an initial evaluation to determine whether a child has a disability and needs special education and related services. A special education referral may be initiated by either the child's school or the child's parent. After a formal referral, the child's parent will be asked to consent to an evaluation.

In the case of a student with dyslexia, the evaluation conducted by the school's special education team will be used to help determine whether the student has a disability as defined by IDEA. During the eligibility meeting, additional information — such as the results of other evaluations, including those not conducted by the school — can be considered in making a determination about the presence of a disability and the child's eligibility for special education services.

As specified in IDEA, there are 13 categories of qualifying disabilities, one of which is "specific learning disability." Dyslexia is found under this broad category, as are dyscalculia and dysgraphia.

Colorado's ECEA Rules state: "A child with a Specific Learning Disability shall have a learning disorder that prevents the child from receiving reasonable educational benefit from general education." The Rules also provide a definition:

> *Specific Learning Disability means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. Specific Learning Disability does not include learning problems that are primarily the result of: visual impairment, including blindness; hearing impairment, including deafness; orthopedic impairment; intellectual disability; serious emotional disability; cultural factors; environmental or economic disadvantage; or limited English proficiency. [ECEA Rule 2.08(8)(a)]*

Colorado's regulations include two major eligibility criteria that must be met (demonstrated through a body of evidence) in order to determine that a student has a specific learning disability:

1) **The child does not achieve adequately for the child's age or to meet state-approved grade-level standards and exhibits significant academic skills deficit(s) in one or more of the following areas when provided with learning experiences and instruction appropriate for the child's age or state-approved grade-level standards: oral expression; listening comprehension; written expression; basic reading skill; reading fluency skills; reading comprehension; mathematical calculation; mathematics problem solving;**

   and

2) **The child does not make sufficient progress to meet age or state-approved grade-level standards in one or more of the areas identified … when using a process based on the child's response to scientific, research-based intervention.**

The CDE has a technical assistance document titled Specific Learning Disability Evaluation and Eligibility, which provides further information and explanation of the eligibility process.

If a student is found to have a disability and is determined eligible for special education, an IEP must be created in compliance with IDEA and, in Colorado, ECEA. An IEP is a document designed for one specific student, with the intention of improving educational outcomes for that student. It is important that the student's parents have an opportunity for meaningful participation in the development of the document and the plan for their child's education program.

Further information about IEPs, including parent resources, can be found at the CDE Individualized Education Program (IEP) webpage.

The school team, along with the student's parents, should address the student's academic difficulties regardless of the eligibility decision that is made. Specific instructional plans to address the area(s) of academic need should be considered through a general education problem-solving process that may include access to non-special education intervention services and programs. Some students with dyslexia who are not found eligible for special education may be provided accommodations through a 504 Plan.

Civil Rights

Section 504 of the Rehabilitation Act of 1973 protects students with disabilities from discrimination based on disability. A student with dyslexia who does not qualify for an Individual Education Program (IEP) may be entitled to protection under Section 504. For example, a student with dyslexia may experience difficulty in completing exams or reading assignments within specified time limits due to reduced reading fluency. The student may require additional or extended time or access to audiobooks and materials. Such accommodations for students who qualify for protection under Section 504 are typically documented in the student's 504 Plan. Section 504 is enforced by the Office of Civil Rights (OCR).

The U.S. Department of Education, Office of Civil Rights website includes helpful information regarding disabilities and Section 504.

8.4 Advocacy for Students with Dyslexia

Parents and guardians are a student's first teacher and most important advocate. Being an advocate for the student with dyslexia means giving a voice to the student's needs when he or she is unable to either understand or express those needs himself or herself. It means helping the student obtain the resources required to meet his or her unique needs.

Parents can increase their understanding of dyslexia, special education, and advocacy by connecting with organizations that promote dyslexia awareness and by accessing web-based information that is free and downloadable, including the following:

- The International Dyslexia Association has a long history in providing up-to-date and research-based information about dyslexia.
- In Colorado, parents can contact the Rocky Mountain Branch of the International Dyslexia Association for local information and events.
- Understood for Learning and Attention Issues is a web-based resource created by the National Center for Learning Disabilities along with a number of other professional and advocacy organizations. Understood.org specializes in providing parents with helpful resources on a range of learning-related topics.

Parents can contact their local public library to locate additional resources such as:

Overcoming Dyslexia (2004), Sally Shaywitz, M.D.

Dyslexia Advocate! How to Advocate for a Child with Dyslexia Within the Public Education System (2016), Kelli Sandman-Hurley

Wrightslaw: From Emotions to Advocacy, Second Edition (2006), Pam Wright and Peter Wright, Esq.

For More Information

Computer-Based Information

CDE technical assistance document *The Consideration of Clinical Diagnosis in the Educational Identification of Disabilities in Accordance with IDEA 2004* addresses clinical diagnosis, special education eligibility and 504 Plans.

The U.S. Department of Education's Office of Civil Rights in 2016 published *Parent and Educator Resource Guide to Section 504 in Public Elementary and Secondary Schools.* This guide addresses eligibility and the creation of 504 Plans.

The National Center for Improving Literacy offers helpful resources to parents. The resources include the following literacy briefs and companion infographics:

Advocating for My Child's Literacy Needs

Key Roles for Children's Literacy Success

Learning About Your Child's Reading Development

Partnering with Your Child's School

Supporting Your Child's Literacy Development at Home

APPENDIX A: GLOSSARY

accommodations

Tools or instructional strategies that provide students who have disabilities with equal access to instruction.

alphabetic principle

The representation of a phoneme (speech sound) by a graphic symbol, such as a letter or letters.

assistive technology

Any item, piece of equipment, or product system that is used to increase, maintain, or improve functional capacities of a child with a disability.

automaticity

The immediate recognition of words while reading.

comorbidity

When two or more disorders co-occur more often than we would expect by chance.

connected text

Words that are linked — as in sentences, phrases or paragraphs — to form meaning.

decoding

The process of using letter-sound correspondences to “sound out” words.

dyscalculia

A specific learning disability in the area of mathematics.

dysgraphia

A specific learning disability in the area of written language and writing.

dyslexia

A specific learning disability in the area of reading. (See Chapter 2: What is Dyslexia for the formal definition.)

encoding

To change a spoken word into writing, typically referred to spelling.

evidence-based

The use of research and scientific studies as a base for determining the best practices in teaching students with dyslexia.

explicit instruction

Instruction that is direct, structured, and systematic in its approach and includes both instructional design and delivery procedures.

fluency

The ability to read a text accurately, quickly, and with proper expression and comprehension.

intensive instruction

Intervention that is designed and delivered to select students with significant and ongoing learning in order to improve learning outcomes; sometimes referred to as Tier III instruction.

interim assessment

An interim assessment is used to evaluate where students are in their learning progress and determine whether they are on track with expectations.

modification

Changes to assignments, tasks, and tests that alter content and/or expectations. (See Chapter 4: School-Based Supports for Students with Dyslexia for the formal definition.)

morpheme

The smallest meaningful linguistic unit in a word.

morphology

The study of the structure and forms of words, including derivation, inflection, and compounding.

multi-tiered system of supports (MTSS)

A framework used to provide increasing levels of support to struggling students.

neural pathway

The connections in the brain that enable signals to be sent from one region of the nervous system to another.

oral language

Spoken language including speaking and listening

orthography

The writing (spelling) system of a language.

phonics

The study and use of the sound-letter correspondences and syllable patterns; a teaching method that stresses letter-sound relationships in reading and spelling.

phoneme

The smallest unit of sound (i.e., a single speech sound) that conveys a distinction in meaning.

phonological awareness

Perception of various levels of the speech-sounds system, such as syllables, accent patterns, rime, and phonemes.

phonemic awareness

Awareness of, and the ability to manipulate, the individual sounds (phonemes) in spoken words.

semantics

The meaning of a word, a phrase, a sentence or text.

specific learning disability

A neurobiological-based processing disorder leading to difficulties in acquiring knowledge and skills to the level expected of those of the same age and ability. (See Chapter 8: Dyslexia and Legislation for the formal definition.)

spelling

Encoding; the reciprocal skill of decoding; hearing the individual speech sounds and then writing the letter or letters that represent the sound.

structured literacy

An approach to teaching students the structure of the English language using direct and explicit instruction in a systematic and cumulative manner, including diagnostic teaching of the essential components of language and reading.

syllable

A word part that contains a vowel sound in spoken language.

syntax

The arrangement of words and phrases to create well-formed sentences.

targeted instruction

Intervention that is designed and delivered to select students in a targeted manner to ameliorate or eliminate reading difficulties as soon as they are identified; sometimes referred to as Tier II instruction.

text comprehension

The ability to make meaning from print.

universal instruction

Instruction that is provided to all students in a class, usually guided by a comprehensive literacy program; sometimes referred to as core instruction or Tier I instruction.

universal screening

The preventative process of regularly checking every student's performance periodically during a school year in order to identify students at risk for reading difficulties.

vocabulary

The body of words and their meanings that students must understand in order to comprehend spoken and written language.

written expression

A highly complex, cognitive, self-directed process, the components of which are planning, drafting, revising, editing, evaluating, and publishing.

APPENDIX B: ACRONYMS

2e

Twice-Exceptional. Twice-Exceptional refers to a student who is gifted and also has a disability (usually, but not always, a learning disability.)

504 Plan

Section 504 of the Rehabilitation Act of 1973 Plan. Section 504 of this federal law prohibits discrimination on the basis of disability in programs and activities that federal financial assistance from the U.S. Department of Education. A plan developed under this legislation includes accommodations that the student needs for equal access to instruction and assessment

ADHD

Attention Deficit Hyperactivity Disorder. ADHD is a biological, brain-based condition characterized by poor attention and distractibility and/or hyperactivity and impulsive behaviors. It is one of the most common disorders that develop in children, and it can co-occur with dyslexia.

ASD

Autism Spectrum Disorder. ASD refers to a developmental disability significantly affecting verbal and non-verbal social communication and social interaction, generally evidenced by the age of three.

ASHA

American Speech-Language and Hearing Association. A professional organization for audiologists, speech-language pathologists, and others interested in serving students with speech-language and/or hearing disorders.

CEC

Council for Exceptional Children. A professional organization comprised of educators and others interested in students with disabilities.

CDE

Colorado Department of Education. The CDE provides leadership, resources, support, and accountability to the state's school districts, schools, teachers, and administrators to help them build capacity to meet the needs of Colorado's public school students. The CDE also provides services and support to boards of cooperative educational services, early learning centers, state correctional schools, facility schools, and state libraries. Through setting a clear vision for increasing student performance, CDE continually supports the advancement and improvement of the state's education system to prepare all learners for success in a rapidly changing global workplace.

ECEA

Exceptional Children's Education Act. The ECEA is a Colorado law that delineates the specific rules for the administration of special education in the state.

EL

English Learner. An English Learner is one whose native language is not English.

FCRR

Florida Center for Reading Research. The FCRR, one of the most widely respected reading-research institutes in the United States, provides a broad range of instructional material for teacher use.

IDA

International Dyslexia Association. The IDA is a nonprofit organization dedicated to helping individuals with dyslexia, their families and the communities that support them.

IDA-RMB

Rocky Mountain Branch of the International Dyslexia Association. This branch works within this community to provide help and resources to individuals with dyslexia, their families and the communities that support them.

IDEA

Individuals with Disabilities Education Act. IDEA is a law that ensures services to children with disabilities throughout the nation. It governs how states and public agencies provide early intervention, special education and related services to eligible infants, toddlers, children and youths with disabilities.

IEP

Individualized Education Program. An IEP is a legal document that clearly defines how a school plans to meet a child's unique educational needs that result from a disability.

LD

Learning Disability. (See also SLD.)

MRI

Magnetic Resonance Imaging. A functional MRI is a noninvasive diagnostic test that measures brain activity as a person performs tasks while in an MRI scanner.

MTSS

Multi-Tiered System of Supports. MTSS is a systemic, continuous-improvement framework in which data-based problem-solving and decision-making are practiced across all levels of the educational system for supporting students.

NCIL

National Center on Improving Literacy. The NCIL is a partnership among literacy experts, university researchers and technical-assistance providers, with funding from the U.S. Department of Education. The center's mission is to increase access to, and use of, evidence-based approaches to screen, identify, and teach students with literacy-related disabilities, including dyslexia.

NCLD

National Center for Learning Disabilities. The NCLD is a national organization that promotes public awareness of learning disabilities. Understood.org is one of NCLD's programs.

NRP

National Reading Panel. The NRP was convened by Congress in 1997 with the aim of assessing the effectiveness of different approaches to teach children to read. The panel issued its report, *Teaching Children to Read,* in 2000.

OCR

Office of Civil Rights. OCR is a sub-agency of the U.S. Department of Education that is primarily focused on enforcing civil rights laws prohibiting schools from engaging in discrimination on the basis of race, color, national origin, sex, disability, age, or membership in patriotic youth organizations. OCR enforces Section 504 in programs and activities that receive Federal financial assistance.

OSEP

Office of Special Education Programs. A subdivision of OSERS, OSEP administers the Individuals with Disabilities Education Act (IDEA). OSEP is dedicated to improving results for infants, toddlers, children, and youth with disabilities ages birth through 21.

OSERS

Office of Special Education and Rehabilitative Services. Through its two main components, OSEP and RSA, OSERS guides and supports a comprehensive array of programs and projects that support individuals with disabilities.

PET

Positron Emission Tomography. A PET scan is a brain-imaging test used in the research and study of dyslexia and numerous other medical conditions to compare brain function.

READ Act

Reading to Ensure Academic Development Act. The READ Act, adopted by the Colorado General Assembly in 2012 and updated in 2019, focuses on early-literacy development

for all students, especially students at risk to not read at grade level by the end of third grade. This state legislation mandates the use of universal screening in grades K-3 for the identification of reading "risk" and subsequent intervention for students who demonstrate this "risk."

READ Plan

Reading to Ensure Academic Development Plan. A READ Plan is an intervention plan that is collaboratively developed by a student's teacher and parents to address that child's identified "risk" for reading failure as determined through universal screening mandated by the READ Act.

RtI

Response to Intervention. RtI is a framework that promotes a well integrated system connecting general, compensatory, gifted, and special education in providing high quality, standards-based instruction and intervention that is matched to students' academic, social-emotional, and behavioral needs.

RSA

Rehabilitation Services Administration. A subdivision of OSERS, RSA carries out Titles I, III, VI and VII, as well as Section 509 of the Rehabilitation Act of 1973.

SLD

Specific Learning Disability. A SLD is an unexpected difficulty in learning basic academic skills. (See Glossary for more formal definition.)

SRD

Significant Reading Deficiency. As mandated by the Colorado READ Act, all K-3 students are screened for reading risk. When a student is identified as being significantly below grade level, the term SRD is used. A student with SRD is administered a diagnostic assessment to determine specific areas of need for reading improvement, and a READ Plan is designed for intervention services.

APPENDIX C: REFERENCES

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