

THE BEACON 2025



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THE BEACON 2025

THE WINDWARD INSTITUTE JOURNAL

IN THIS ISSUE

- 5** Catch Them Before They Fall:
Early Identification of Dyslexia
By Jamie Williamson, EdS
- 15** The Neurobiology of Dyslexia: How Understanding
the Brain Can Inform and Empower Educators
By Danielle Gomez, EdD
- 21** Identification of English Learners with Dyslexia
and Other Language-based Reading Disabilities
By Alba A. Ortiz, PhD and Linda Cavazos, PhD
- 29** On Ramp to Reading
By Alexis Pochna, EdM
- 35** Q&A with Dr. Tim Odegard
By Jana Cook and Danielle Gomez, EdD
- 41** How the Science of Reading Can Deliver on Its Promise
By John J. Russell, EdD
- 49** Leveraging Technology to Empower Students
with Dyslexia
By Joan McGettigan, EdD
- 55** A Conversation with Lori Holt
By Jana Cook and Alexis Pochna, EdM
- 61** Decoding Dyslexia in Math Class
By Lisa Murray, MPA
- 67** The Language of Emotion: Enhancing Education
Through SEL
By Anna Weiser, PsyD and Jonathan Rosenshine, MEd
- 72** WHAT THE INSTITUTE IS READING NOW
- 74** REFERENCES

About The Windward Institute

The Windward Institute (WI) is a division of The Windward School and fulfills the School's mission by sharing Windward's expertise through world-class, accessible, and affordable resources for educators, parents/guardians, and policymakers with the aim to ultimately improve literacy rates worldwide.

EVIDENCE-BASED INSTRUCTION

The Institute leverages the most current research to translate science into practice in the classroom.

ADVOCACY

The Institute continues to push for educational reform for all children. Every child deserves to be successful in school, regardless of background and circumstance.

COLLABORATION

The Institute partners with leading educational institutions to advance and share research in the field, informed by an advisory board that includes top dyslexia researchers.



IN THIS ISSUE: A COMPREHENSIVE LOOK AT DYSPLEXIA

Dyslexia affects 5%–17% of children (De’Mello & Gabrieli, 2018), yet misconceptions about this common learning disability persist. This annual issue of *The Beacon* aims to illuminate these misunderstandings and chart a path forward for educators, families, policymakers, and others committed to ensuring reading success for all.

This issue opens with a feature article highlighting the critical importance of early identification in meeting the needs of learners with dyslexia and those at risk of reading difficulties. Screening for reading risk enables timely interventions, a far more proactive and effective approach than the archaic practice of waiting for students to fail before providing targeted reading instruction. For English learners, the identification process poses unique complexities, which are further explored in this issue of *The Beacon*.

The science of reading, rooted in decades of interdisciplinary research, provides a strong foundation for evidence-based instruction. Advances in neuroscience have deepened our understanding of

the neurobiological basis of dyslexia and have demonstrated that structured, explicit reading instruction activates and strengthens brain pathways associated with reading. These findings, as well as the necessary elements of instruction for students with dyslexia, are discussed in detail.

Building on this knowledge, this issue provides practical recommendations for leaders to scale these proven instructional practices to reach more students. It also explores advancements in educational technology that present exciting new opportunities for supporting diverse learning needs.

Dyslexia’s impact extends beyond literacy, affecting areas such as math learning and emotional wellness. This issue highlights the importance of integrated systems that combine effective academic interventions with social-emotional resources and support. By addressing these needs in a coordinated way, schools can better serve students with dyslexia on their journey toward achieving academic and personal success.

To emphasize the importance of using research to guide policy and intervention, this issue features Q&A sessions with leading researchers in the field. These discussions highlight insights gained from current studies while also identifying areas for future exploration. By examining how the science of reading continues to evolve, we can better understand how to translate research into meaningful change in our classrooms.

Improving reading outcomes for students with dyslexia and other language-based learning disabilities is a collective responsibility. Achieving lasting solutions requires collaboration among educators, families, and policymakers to ensure that effective practices are implemented and sustained. I encourage you to engage with the ideas presented in this issue and join The Windward Institute in its dedication to advancing literacy for all learners.

Warm regards,



Alexis Pochna
Director of The Windward Institute

CATCH THEM BEFORE THEY FALL: EARLY IDENTIFICATION OF DYSLEXIA

By Jamie Williamson, EdS, Head of The
Windward School and Executive Director of
The Windward Institute



Think about the last time you went to the doctor for a checkup.

Depending on your age and family history, they may have taken blood to run a lipid panel and check levels of total cholesterol, HDL and LDL cholesterol, and triglycerides. If you were shown to be at risk for heart disease, they may have followed up to discuss lifestyle changes to reduce risk. They may have even provided further information about symptoms of a heart attack or stroke and what to do if you experience any symptoms. That information also may have been displayed prominently in the doctor's office, for example, a poster with the acronym BE FAST outlining the signs of a stroke and when to seek emergency care. The above experience has become fairly common, but it was not always that way.

In the 1920s, having cardiovascular disease (CVD) was considered a death sentence. With the creation of the American Heart Association in 1924 and the decades of research that followed, researchers and doctors gained invaluable insights into the causes of heart disease and what can be done to mitigate risks. What resulted was one of the great public health achievements of the last century, a major decline in deaths related to heart disease. In fact, since the 1960s, the mortality rate from CVD has declined more than

70%, which is attributed to significant improvements in screening, prevention, and treatment of CVD and related risk factors (U.S. Department of Health and Human Services, 2018). Many of the measures patients now consider routine are, in large part, the result of years of data that has coalesced into a robust framework consisting of greater public awareness, regular screenings, and early interventions (Ford & Capewell, 2011).

Now imagine if we had the same infrastructure in place for the identification and remediation of dyslexia and other language-based learning disabilities.

CONSTELLATION OF FACTORS

Dyslexia is a complex disability that is neurobiological in origin, with neither a single causal factor nor the same presentation in every individual. Advances in neuroscience have made it possible to capture imagery of structural and functional differences in the brains of individuals with dyslexia, which,

in some cases, have been detected as early as infancy (Gaab & Duggan, 2024). Brain scans cannot diagnose dyslexia, nor is that what this research aims to do. However, studies showing marked differences in the brains of those with dyslexia help inform the neurological basis of the disability and point to the fact that some students enter kindergarten with a neurophysiological disadvantage for learning to read.

Some students enter kindergarten with a neurophysiological disadvantage for learning to read.

Up to 50% of people with dyslexia also have developmental language disorder (DLD), a brain-based disability that impacts a person's ability to learn, organize, and understand oral language (Adlof & Hogan, 2018). Persistent challenges related to DLD include vocabulary and new word learning, comprehension, and understanding and expressing ideas verbally.

To learn more, see the article "The Neurobiology of Dyslexia: How Understanding the Brain Can Inform and Empower Educators" on page 15 of this issue.

Both dyslexia and DLD are highly heritable, with the former occurring in roughly 45% of individuals who have a first-degree relative with the disability (Snowling & Melby-Lervåg, 2016).

So, we know that there are differences in the brains of individuals with dyslexia—detectable as early as infancy—and we know there is a high comorbidity rate with developmental language disorder, as well as evidence showing a large percentage of people with dyslexia who have a parent or sibling with the condition. Reading researchers have also come to consensus that multifactorial identification models, looking at risk factors, promotive factors, and protective factors, are most likely to provide the clearest picture of who may be at risk for reading problems. “Risk factors are variables that increase the likelihood of severe and persistent difficulties learning to read” (Catts & Petscher, 2022, p. 174). In their cumulative risk and resilience model of dyslexia, Catts and Petscher outlined these risk factors:

- **Phonological deficits:** difficulties with recognizing, manipulating, recalling, and reflecting upon the sounds of spoken language
- **Language impairments:** deficits in vocabulary, grammar, and overall oral language abilities

- **Attentional deficits:** 25%-40% overlap with dyslexia, higher than would occur by chance (Willcutt & Pennington, 2000)
- **Visual problems:** deficits in visual temporal processing and visual attention; problems with visual crowding
- **Trauma/stress:** neurological effects of adverse childhood experiences (ACEs) when co-occurring with other risk factors (2022)

Promotive factors are those that are good for all readers, not only for those at risk: for example, a rich language environment and evidence-based core reading instruction. Protective factors, or resilience factors, are moderators in that they may offset risk:

- **Instruction:** systematic, structured, intensive in tiers 1, 2, and 3
- **Growth mindset:** internalizing the idea that one can grow their intelligence, an effect that may be stronger for children at risk (Petscher, 2017)
- **Task-focused behavior:** high engagement (effort) in tasks and persistence through challenges

- **Adaptive coping strategies:** belief that one’s effort drives progress, anchored with goal setting and positive outlook
- **Teacher, family, and peer support:** teacher encouragement, peer acceptance, nurturing family relationships, rich at-home literacy environment (Catts & Petscher, 2022)

All the data outlined above, amassed over decades of research, illuminates factors that increase the likelihood that a child will be at risk for reading difficulties. It is notable that based upon the above considerations, level of risk can be assessed prior to the onset of formal reading instruction. This is a critical distinction, because studies have also shown that when students receive interventions as early as kindergarten or first grade, they are more effective (Wanzek & Vaughn, 2007).

It is notable that level of risk can be assessed prior to the onset of formal reading instruction.

IT MAY BE TIME TO RETHINK SCREENING

One of the enduring consequences of the “wait to fail” approach to reading intervention is the devastating impact it can have on students’ well-being and long-term academic success.

As public awareness of reading disabilities has grown in recent years, lawmakers have responded in increasing numbers by introducing legislation aimed at addressing the literacy problem in the U.S. To date, 40 states and the District of Columbia have passed laws mandating screenings, for example.

And while this is an encouraging sign, there is still much work to be done to solve the conundrum of early identification, including commonsense steps that can be taken to screen young children early, often, and in multiple contexts.

Identifying children at risk for reading problems can begin as early as age 3 (Puolakanaho et al., 2007), by gathering data on early language skills from developmental screeners, family histories, and pre-K screeners. Many children with dyslexia also have some degree of difficulty with spoken language, which, when combined with

additional factors, can increase the probability of encountering issues with learning to read (Snowling et al., 2016).

Developmental screeners, conducted by pediatricians or other care providers, typically assess five domains of functioning: 1) cognitive, for example, counting and identifying shapes; 2) language, or speech and comprehension; 3) fine motor, such as writing and drawing; 4) gross motor, as in crawling, jumping, and running; and 5) social-emotional, including playing with other children. One early indicator of potentially being at risk for later reading problems, for example, is whether the child was late to begin talking (Lyytinen et al., 2005; Preston et al., 2010; Rescorla, 2002).

Pediatricians can and should also consider incorporating simple literacy screeners into well-child visits, because health providers can be key in referring families to appropriate external reading experts for gathering additional data.

Preschool

- Listening for signs of delays in speech development
- Is a child able to rhyme? (“What rhymes with /pig/?”)
- Can a child name letters?

Kindergarten

(all of the above, including the following):

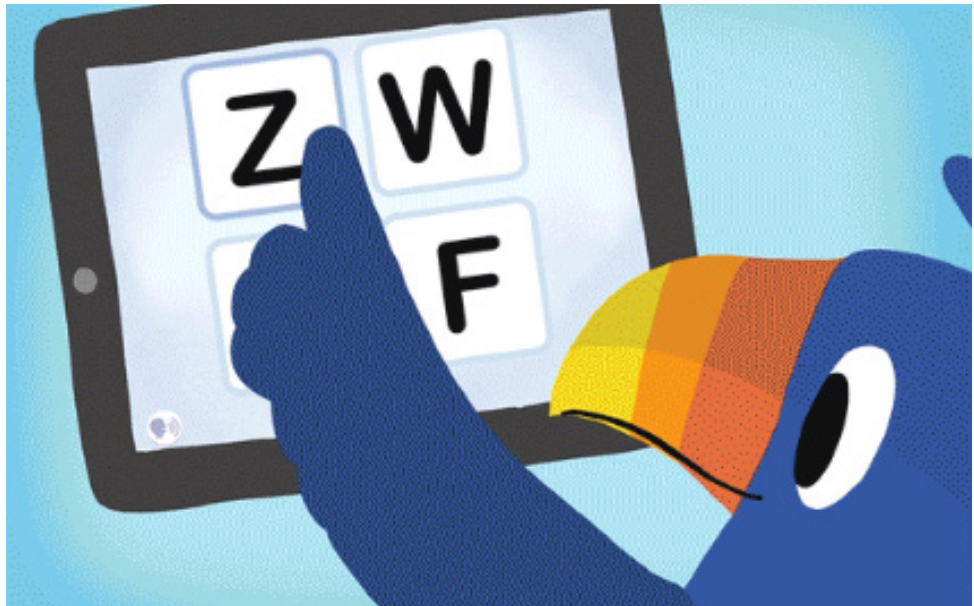
- Can a child segment speech sounds within a word? (“What is the last sound that you hear and pronounce in *mop*?”)
 - Can a child map letter sounds to letters?
 - Can a child blend individual sounds together to pronounce a word? (“Can you push these sounds together into a word /k/ /ă/ /t/?”)
 - Does a child have difficulty with handwriting? (“Write your name on this paper.”)
 - Probing for signs of frustration (e.g., avoiding reading, complaining that reading is too hard). (“What are your favorite books to read?” or “What do you like to read for fun?”)

First Grade and Beyond

(all of the above, and below)

- Does a child have difficulty with spelling? (“Spell /top/. Now spell /ship/.”)
- Can a child read simple words of one syllable? (“Read this list of words:” map hit net bug.)

(Ness, 2018)



Source: Image courtesy of Imagine Learning

The aforementioned domains of functioning and a complete family history, combined with early literacy predictors, can develop a fuller picture of a child's likelihood of developing reading problems. Critically, and previously noted, these predictors can be assessed before the child begins formal reading instruction.

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. (Colorado Department of Education, 2024)

While evidence mounts confirming the urgency of early intervention for reading problems, some experts have answered the data by designing simple, literacy-specific screeners for preschoolers. One promising screener, the EarlyBird Program, was developed by Dr. Nadine Gaab, Dr. Yaacov Petscher, and Carla Small in partnership with Boston Children's Hospital and the Florida

Center for Reading Research. This gamified, engaging assessment includes the foundational components of early reading in order to identify at-risk pre-K and kindergarten students, and it can be deployed in school or home settings.

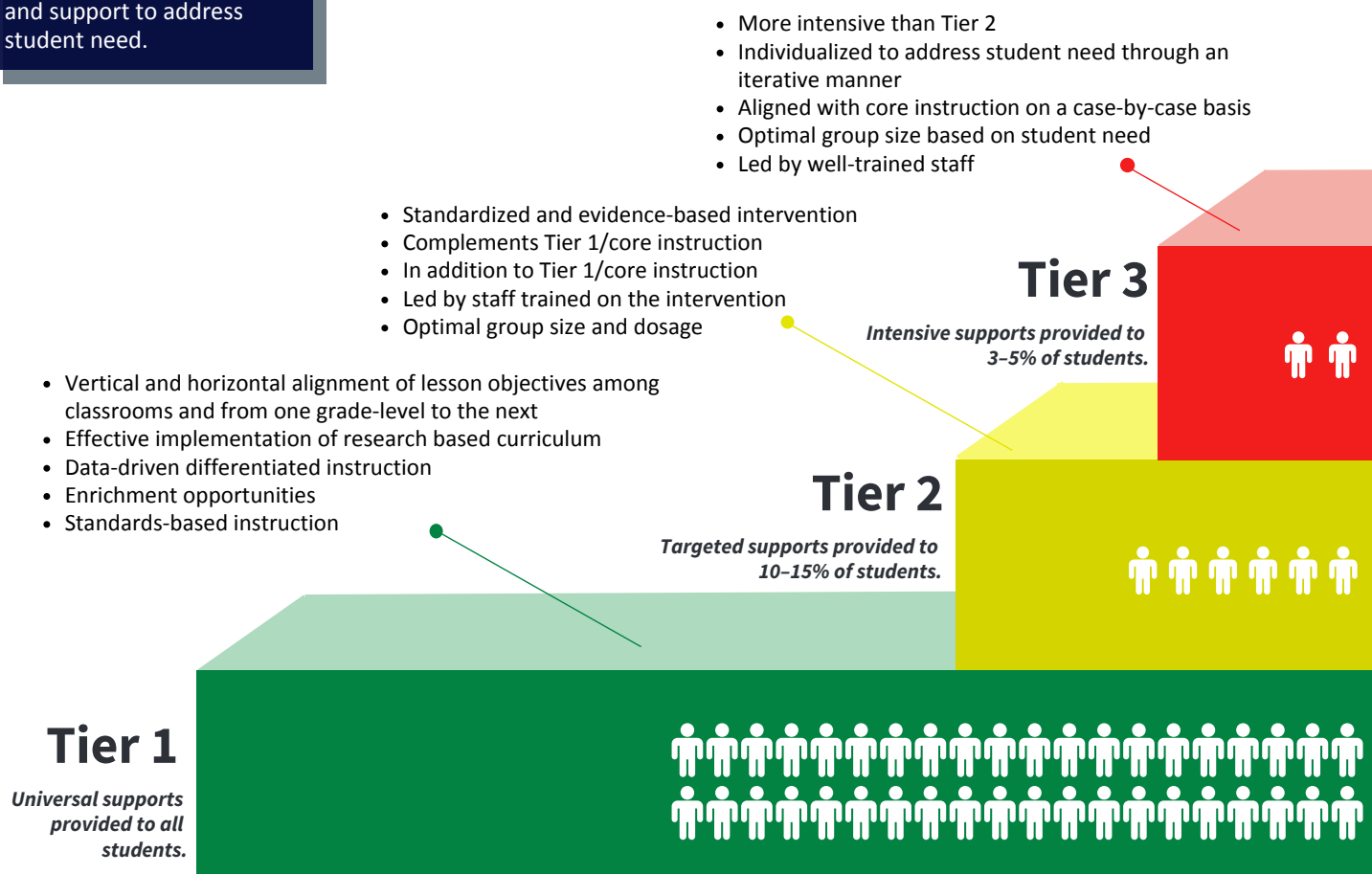
A familiar refrain for many educators who align with structured literacy principles is “screen early, screen often.” So, how does this translate on an actionable basis? It means screening children before they enter school for developmental milestones that affect risk. And it means screening students in grades K and 1 at least two to three times per year and examining that data for signs that a student may require targeted interventions. This approach necessitates a solid core reading program, which benefits all emerging readers but will specifically reduce the number of false positives that can occur when screening kindergartners. The floor effect—when a massive number of students score positive for being at risk for reading

problems—is most pronounced early in the school year for the youngest students, as many students enter school with vastly different literacy experiences prior to beginning kindergarten (Catts, 2021).

To differentiate those students who will go on to be typically developing readers from those who require interventions, educators can screen students in October of kindergarten after some reading instruction has begun, screen again in the winter, and, finally, screen again in the spring. Screening after reading instruction has begun and testing again before the end of school year can help narrow down those students who may be at risk for reading problems and require interventions. But of course, once educators have this data, there needs to be the infrastructure in place to act upon it, which can present logistical and financial barriers for many schools and districts.

The multi-level prevention system provides increasingly intense levels of instruction and support to address student need.

What is Multi-Level Prevention System?



Source: American Institutes for Research. (2023). What is multi-level prevention system

https://mtss4success.org/sites/default/files/2023-03/MLPS_infographic.pdf. Reprinted with permission.

EARLY IDENTIFICATION'S PURPOSE IS EARLY INTERVENTION

We know that the earlier we intervene, the better children do. Based on a meta-analysis by Wanzek et al. published in 2018, studies show that word reading interventions are most efficacious for improving literacy outcomes when employed in kindergarten and first grade, as opposed to later grades. Partly this is due to the incredible neuroplasticity of children's brains from birth to age 7 (Scorrano, 2021). Also worth noting is the fact that as students advance through elementary school, they transition from learning to read to reading to learn (Chall, 1983). Disparities in reading

skills then become more pronounced, with greater negative effects on academic performance and self-confidence. Studies show that 79% of struggling readers who fall behind by third grade never catch up with their peers (National Center for Education Statistics, 2019), which has a ripple effect that is far reaching: Students who are not proficient readers by fourth grade are four times more likely to drop out of high school (Annie E. Casey Foundation, 2011).

This is why a solid framework for core reading instruction and intervention becomes critical, as the investment by educators—both in time and funds—in early interventions not only keeps

students engaged in learning but helps alleviate pressures on the system later.

In practical terms, what this approach can look like is pairing screening tools with short-term interventions to more accurately assess dyslexia risk (Miciak & Fletcher, 2020). If schools or districts have a solid response to intervention (RTI) model in place, with robust progress monitoring and well-established tiers of instruction, those students misidentified as being at risk respond to initial interventions, while those requiring more intensive supports emerge more clearly.

The effectiveness of a multi-tiered system of supports (MTSS) largely hinges upon students receiving instruction that is closely aligned with their needs (Al Otaiba et al., 2009). “For some children who fail screening (and follow-up assessments), the most appropriate action is to provide Tier 2 supplemental code-based instruction that involves more explicit instruction, scaffolding, and practice” (Catts & Hogan, 2020, p. 10). However, for some students—those at highest risk based on records related to developmental milestones, family history, and initial screenings—moving directly into tier 3 instruction may provide greater benefits than moving them into tier 2, waiting for additional data, and then moving them to tier 3. Compton et al. (2012), for example, found that close examination of initial screenings can be predictive as to which students are unlikely to respond to tier 2 interventions; in these cases, students would be best served by immediately receiving intensive, tier 3 interventions.

In all cases, having an established, evidence-based system of support that relies upon progress monitoring to identify and address learning gaps as they occur leads to better literacy outcomes, both for typically developing readers and students who struggle.

In an effort to shine a light on the importance of moving away from a reactive approach to reading intervention, Ozernov-Palchik and Gaab (2016) coined the term “dyslexia paradox,” which describes the challenges inherent to dyslexia typically being diagnosed after the window for most effective intervention has closed. And while it is never too late to intervene and remediate issues related to dyslexia, the science clearly shows us that the earlier, the better.

WHY EARLY IDENTIFICATION MATTERS

When the system waits for children to essentially fail academically before addressing reading problems, the ramifications can be extreme and lifelong. A student who struggles to learn to read in early grades, for example, may be driven toward engaging in avoidant behaviors around school. Dr. Vincent Alfonso, in a recent episode of The LDA Podcast, noted that “if we don’t intervene early and students are continuing to be promoted socially or otherwise, but they’re not doing well, there’s a greater probability that they’re going to be turned off to school... and then that makes it more and more difficult to help” (Clouser, 2022).

More concerning is that students with dyslexia who consistently struggle academically often suffer loss of self-esteem in general and have higher rates of anxiety and depression than students without learning challenges (Arnold et al., 2005; Chapman et al., 2000).

There are a host of other factors related to mental health and social-emotional growth that impact quality of life for children with dyslexia who go undiagnosed.

60% of individuals with dyslexia also meet criteria for at least one psychiatric disorder (Margari et al., 2013).

Teens with learning disabilities have **double** the risk of emotional distress, including violent behaviors and suicide attempts (Svetaz, Ireland, & Blum, 2000).

Students with dyslexia report **higher** levels of academic anxiety than their peers (Carroll & Iles, 2006).

Low academic self-concept in students with dyslexia can lead to them internalizing their difficulties, becoming withdrawn and depressed (Wilcutt & Pennington, 2000).

Of youth incarcerated,
28%-45%
 have a learning disorder
 (Gaab, 2019).

Conversely, when students with dyslexia receive the intervention they need, in a nurturing and supportive environment, it has a protective effect on mental health. We have seen this anecdotally at The Windward School over many years, but the research bears it out, as well. In one 2023 review of 98 studies worldwide related to mental health and dyslexia, two sets of researchers cited evidence that suggested “that school connectedness may be a particularly salient protective factor for the socio-emotional well-being of children with learning difficulties” (Wilmot et al., 2023, p. 12). In fact, children with dyslexia reported much lower levels of anxiety when they felt that their educators understood and supported their learning disability (Chiappedi & Baschenis, 2016).

Windward has long recognized the need to provide structured, robust social-emotional learning supports to its students, as a key piece of remediation is mitigating the negative impact of, in some cases, traumatic experiences students endured prior to joining the School. Many students with dyslexia may also struggle to interpret others’ emotions through facial cues and vocal tone (Operto et al., 2020), or have difficulty recognizing and regulating their own emotions (Rieffe et al., 2008),

which underscores the importance of offering these students both a dedicated social-emotional learning curriculum and an established program schoolwide that helps community members grow their emotional intelligence. For example, the RULER approach—developed by the Yale Center for Emotional Intelligence—is an evidence-based program placing a strong emphasis on developing emotional intelligence and social skills among students. (The Windward School is currently in year one of its two-year RULER implementation timeline, with the program slated to roll out to students and families in the 2025-2026 school year.)

Attending to the social-emotional needs and mental health of students with reading difficulties has shown to positively impact their academic achievement: One recent study by Vaughn et al. (2022) found that when students’ reading lessons were paired with anxiety management interventions, their reading comprehension scores improved.

And although it is heartening to see educators and researchers expanding treatment domains to include the effects of dyslexia on students’ emotional landscapes, and what can be done to

ameliorate those effects, it is a reactive approach that treats the symptoms, not the cause. We can do better by our nation's students with dyslexia.

Just as health outcomes vastly improve when those at risk for heart disease are screened early, assessed for family history, and offered prophylactic measures such as medications and lifestyle changes, taking a preventative approach to dyslexia identification and intervention leads to better outcomes for these students and their families. With proper interventions, 96% of students with dyslexia can reach grade-level reading expectations (Torgeson, 2009), which is critical to academic and life success. If early identification and early intervention were the norm, I believe that number could climb even higher. We owe it to these kids to catch them before they fall.

READ

Margolis, A. E., & Broitman, J. (2023). *Learning Disorders Across the Lifespan*.

Gaab, N. (2017). It's a myth that young children cannot be screened for dyslexia. *Examiner*. International Dyslexia Association.

WATCH

The Windward Institute. (2023, November 15). *Psychological Components of Reading Disabilities: Novel Interventions to Address Anxiety and Executive Functioning with Amy Margolis, PhD* [Video]. YouTube.



LISTEN

Scorrano, D. (Host). (2021). *Decoding the Literacy Crisis with Ken Pugh, PhD* (No. 11) [Audio podcast episode]. In READ Podcast. The Windward Institute.

Scorrano, D. (Host). (2021). *Early Identification and Intervention of Reading Disabilities with Hugh Catts, PhD* (No. 18) [Audio podcast episode]. In READ Podcast. The Windward Institute.



Use this QR code to explore READ, WATCH, LISTEN resources.

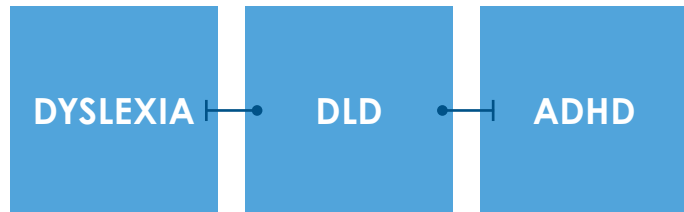
The Windward Institute partners with local libraries in New York City and the tri-state area to provide free reading screenings for students in grades K–3 several times per year, made possible by the Early Literacy Endowment.

DEVELOPMENTAL LANGUAGE DISORDER (DLD)

WHAT IS DEVELOPMENTAL LANGUAGE DISORDER (DLD)?

DLD is a brain-based, developmental disorder that makes using language and understanding language difficult. It can cause academic and/or social-emotional difficulties.

DLD can co-occur with other disorders, such as dyslexia and Attention Deficit Hyperactivity Disorder (ADHD)



ARE DLD AND DYSLEXIA SIMILAR DISORDERS?

- DLD and dyslexia are both common language-based learning disabilities that are lifelong.
- While they both indicate difficulties with language and reading, dyslexia reflects a primary word-reading difficulty, whereas DLD results in weaknesses with overall language.
- Both disorders are highly inheritable between families.

KIDS WITH DLD ARE:

4x more likely to have math difficulties

6x more likely to have reading difficulties

WHAT DOES DLD LOOK LIKE IN STUDENTS?

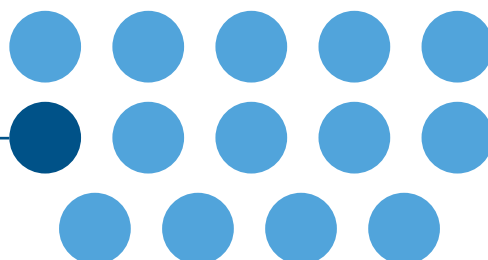
Kids with DLD may exhibit:

- Problems finding the right words, expressing ideas, talking about events, or answering questions
- Problems understanding academic information and/or following directions
- Problems paying attention
- Problems socializing with peers
- Problems with written language

HOW COMMON IS DLD?

Roughly 1 in 14 kids has DLD.

It is almost **5 times** more common than autism.



DLD is often first noticed in early childhood and does not go away.

THE NEUROBIOLOGY OF DYSLEXIA: HOW UNDERSTANDING THE BRAIN CAN INFORM AND EMPOWER EDUCATORS

By Danielle Gomez (née Scorrano), EdD,
Research and Outreach Director at The
Windward Institute



Dyslexia is a learning disability that affects a person's reading outcomes and is notably characterized by specific difficulties in word-reading skills. Research over decades has illustrated the neurobiological nature of dyslexia, aiming to understand the various brain regions, functions, and networks that contribute to both reading difficulties and compensatory mechanisms that mitigate these challenges (International Dyslexia Association, 2002; Munzer et al., 2020). Studies across multiple scientific disciplines emphasize the effects of dyslexia on reading outcomes. Yet, a dyslexia diagnosis also has vast implications across numerous facets of a child's academic and social life. While researchers continue to deepen and broaden the existing knowledge of the underlying brain signatures of children with dyslexia, it remains critical for the public to learn about the brain basis of dyslexia. Specifically, stakeholders in education and child development must

- recognize that brain differences exist for children with dyslexia.
- understand the differential impacts of a dyslexia diagnosis on children.
- implement evidence-based structures, supports, and strategies for children with dyslexia in their schools, homes, and communities.

These steps build a shared understanding of dyslexia and establish a proactive foundation for children in this subset of the population to thrive academically and throughout their lives.

OPERATIONALIZING DYSLLEXIA FOR EDUCATORS

Dyslexia—its definition, characteristics, skills, and processes in the brain—has been well documented across research, policy, psychiatric, and educational settings. It is estimated that 5%-17% of children have dyslexia (De'Mello & Gabrieli, 2018), which means it commonly affects children in every school and community. While variations of definitions exist, key themes emerge that matter for educators and caregivers.

1. Dyslexia impacts a child's ability to learn to read. Some definitions specifically name dyslexia as a learning disability (International Dyslexia Association, 2002; Learning Disabilities Association of America, n.d.; Individuals with Disabilities Education Act, 2004), while others refer to dyslexia as a disorder (American Psychiatric Association, 2022). It is important for educators and caregivers to understand that with a diagnosis of dyslexia, a child could have increased difficulty with reading and language (Norton et al., 2016).

2. Dyslexia impairs word reading and additionally impacts a variety of other reading skills. Kearns and colleagues (2019) explain, "Despite the many differences, many definitions include one common characteristic—difficulty recognizing words" (p. 176). Continued work in understanding the impacts of dyslexia on other reading skills—including reading comprehension, spelling, and writing—remains a priority in research (Wolf et al., 2024). In the classroom, this means that educators must ensure their reading curriculums and instruction emphasize an explicit, structured approach to teaching word-reading skills and encompass a multicomponent model for addressing the complexity of reading skills and development.

3. Dyslexia is lifelong. Lyon and colleagues (2003) characterize the difficulties associated with dyslexia as persistent. People do not receive a diagnosis as a result of lack of effort or motivation learning to read. Dyslexia

is also not associated with deficits in language opportunities or exposure to reading instruction at home or school (De'Mello & Gabrieli, 2020; Wolf et al., 2024). Instead, differences that exist in the brain contribute to behaviors that make learning the skills for reading and language more difficult. This is why intervention is critical for children with dyslexia, especially in early elementary grades, in order to remediate foundational word-reading and language skills and mitigate further challenges. In addition, Wolf and colleagues (2024) posit, “Dyslexia can change over time, particularly when strengths and advantages of these unique differences in brain organization are fostered alongside preventive factors” (p. 317). Consequently, we must prioritize continued advocacy and proactive supports throughout a child’s education and beyond.

4. Dyslexia is neurobiological

in origin. Numerous studies have uncovered the inner brain mechanisms and processes associated with dyslexia, pointing to its neurobiological origins (International Dyslexia Association, 2002; Norton et al., 2016). Neurobiological means that dyslexia can be attributed to certain structures, networks, and functions in the brain

that are related to reading and language processing. While the inner workings of the brain may seem distant to teaching and learning, understanding the brain has direct implications for educators in the ways they view and provide instructional supports and interventions for children with dyslexia.

A DEEPER DIVE INTO DYSLEXIA AND THE READING BRAIN

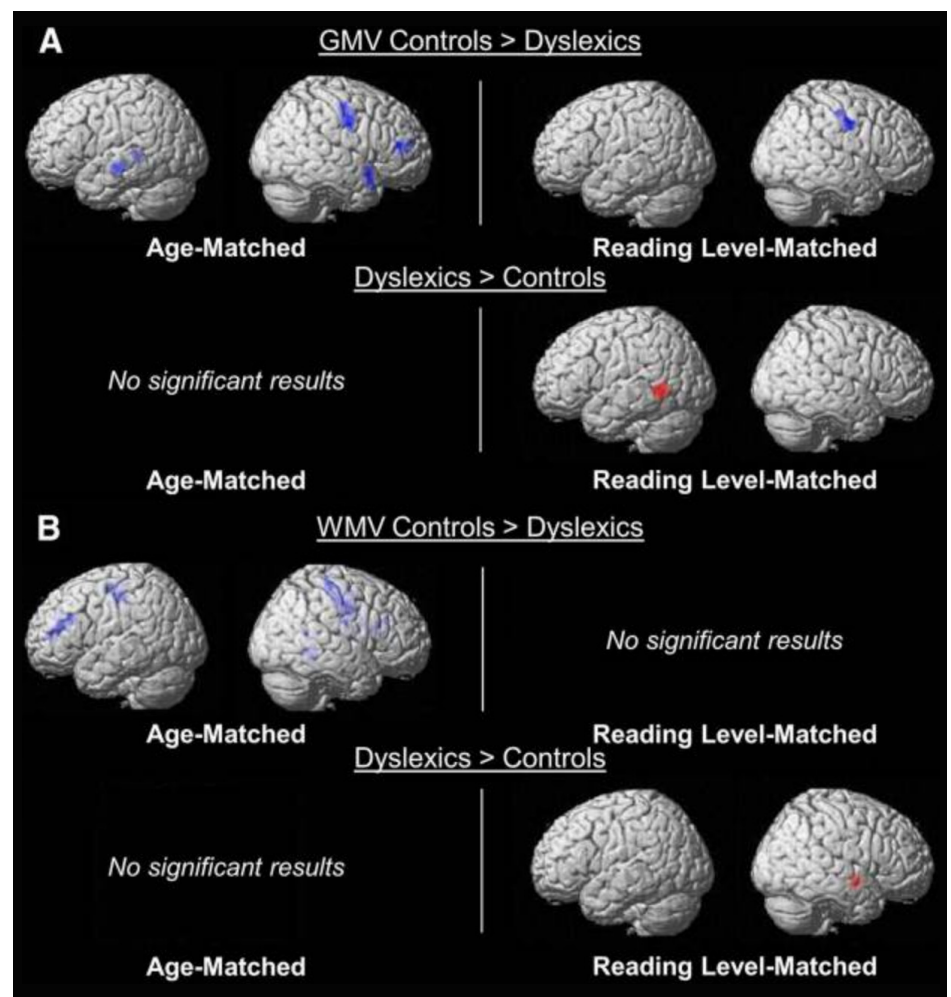
Although years of research point to the neurobiological basis of dyslexia, the story of dyslexia cannot be told in a single narrative or thread of research. Maryanne Wolf, EdD, a renowned cognitive neuroscientist and expert in literacy development and dyslexia, explains, “The reality is that the study of dyslexia helps to reveal the complexity of reading itself. Weaknesses in the brain and genetic makeup [in the brains of people with dyslexia] were there well before children ever entered the kindergarten door” (Scorrano, 2021). To understand the brain of a child with dyslexia is to understand the reading brain. Decades of cognitive neuroscience have shown that humans are not born with brains automatically wired for reading and that the brain must adapt over time to develop the skills for reading (Gotlieb et al., 2022). By studying brains of

people with and without dyslexia using fMRI technology, neuroscientists have developed an understanding of the neurobiological differences among these brains (De'Mello & Gabrieli, 2018; Kearns et al., 2019; Norton et al., 2016). Further research demonstrates that not all brains with dyslexia are the same, implying that dyslexia cannot be attributed to a single cause, region, or structural organization (Ozernov-Palchik et al., 2017; Wolf et al., 2024). Growing evidence of the brain’s involvement in dyslexia deepens our understanding of its causes and characteristics and breeds new questions.

A MORE COMPLEX MODEL OF READING DEVELOPMENT AND DIFFICULTIES

The neurobiology of dyslexia provides insights into how the brain's organization and processes translate into reading and language behaviors that educators and caregivers observe in classrooms and homes. Cognitive neuroscience is one approach within the overall interdisciplinary study of reading that seeks to explain difficulties and disabilities like dyslexia. By studying dyslexia and reading through an interdisciplinary lens, researchers have been able to connect evidence from brain imaging and behavioral studies to understand that the challenges associated with dyslexia occur across a continuum (Wolf et al., 2024).

Comprehensive models of reading and dyslexia, such as multifactorial and risk and resilience frameworks (e.g., Catts & Petscher, 2022; Haft et al., 2016), identify the risk factors that contribute to the spectrum of difficulties and the protective factors that mitigate risk and promote resilience. Overall, these models consider the interplay between neurobiological, genetic, and environmental influences on the child's brain and behaviors (Catts & Petscher, 2022).



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WHAT THIS ALL MEANS FOR HOMES, SCHOOLS, AND COMMUNITIES

Translating neuroscience to educational practice benefits educators and caregivers through an increased awareness about dyslexia and the reading brain. Our understanding of the neurobiology of dyslexia not only informs the presence and heterogeneity of dyslexia, but it also illuminates the brain’s “neurocognitive flexibility” (Kearns et al., 2019, p. 181). Neuroimaging research illustrates the brain’s ability to adapt when children are taught word-reading skills in high-quality interventions. Specifically, these studies show that children with dyslexia tend to have differences in the activation of brain networks as well as gray matter volume, or brain tissue that consists of neurons needed for processing information (Kearns et al., 2019). With explicit word-reading intervention, brain imaging tools have shown changes in brain activity and gray matter volume (Barquero et al., 2014; Krafnick et al., 2011). Current research continues to investigate the ways in which explicit and structured word-reading instruction with appropriate dosage, intensity, and repetition can actually change students’ brains. Predicting Literacy Outcomes at The Windward School (P.L.O.W.), led by Nicole Landi, PhD and her team of researchers at Haskins Laboratories

at the Yale Child Study Center, is one example of a multi-year study seeking to utilize brain imaging and behavioral assessments in school settings to understand the mechanisms of effective reading instruction on the brain (Landi et al., 2022). Drawing on evidence from interdisciplinary research, it remains fundamental to prioritize the scalable implementation of

- universal screening for risks of dyslexia, which includes short behavioral measures of foundational reading skills.
- systematic, structured literacy instruction coupled with progress monitoring and interventions for children who show risks.
- teacher preparation and continued in-service professional development for educators about dyslexia and instructional approaches to support students’ academic and personal development.
- systems, structures, and communities that are inclusive to neurodiverse students like children with dyslexia and supportive of all members to thrive.

FURTHER QUESTIONS AND DIRECTIONS

For decades, scientists have learned about dyslexia and the reading brain, informing stakeholders across education and policy contexts. Commensurate with the course of the scientific method, our deepened understanding of dyslexia has fostered further questions and directions for how researchers define and conceptualize dyslexia to include a more comprehensive model (Odegard et al., 2024). Some questions include (1) understanding the complexity of reading and the multitude of skills that contribute to proficiency (Petscher et al., 2020); (2) examining reading development and difficulties through whole child approaches and risk and resilience models that account for more comprehensive risk and preventive factors (Catts & Petscher, 2022; Wolf et al., 2024); and (3) exploring reading and dyslexia across cultural contexts and writing systems (Wolf et al., 2024). As researchers continue to examine these complexities, the evidence on the reading brain and dyslexia proves that educators and caregivers can create environments that change our children’s reading brains and, more importantly, support and empower them in their academic and personal endeavors throughout their lives.

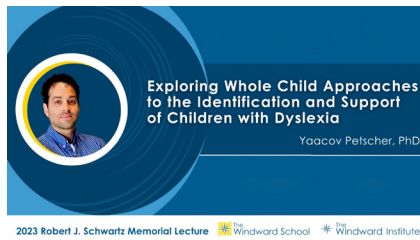
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IDENTIFICATION OF ENGLISH LEARNERS WITH DYSLEXIA AND OTHER LANGUAGE-BASED READING DISABILITIES

By Alba A. Ortiz, PhD and Linda Cavazos, PhD



National prevalence data indicate that English learners (ELs) are over-represented in special education programs. They represent 10% of the general student population but 14% of students with disabilities (U.S. Department of Education, 2022). Almost half are classified as having Specific Learning Disabilities (SLD), with reading being the most commonly identified problem (Wisconsin Center for Education Research, 2017). However, due to differences in definitions and eligibility criteria, ELs may be under-identified as students with disabilities in individual states or school districts. Underrepresentation is a serious issue, because it denies ELs the specialized instruction they need to achieve their full social and academic potential.

Both over- and underrepresentation indicate that educators have difficulty determining whether reading difficulties signal the presence of a learning disability or are caused by factors like limited English proficiency or lack of access to culturally and linguistically responsive (CLR) reading instruction and intervention. Making this distinction is complicated by the similarities in the characteristics of ELs and those of students with dyslexia or other language-based reading disabilities

(see Table 1). Both groups confuse words that sound alike, mispronounce unfamiliar or multisyllable words, have limited vocabulary, and read slowly or avoid reading at all. In the early grades, teachers may assume that these problems are caused by limited English proficiency, a conclusion that leads to underidentification of reading disabilities. In later grades,

because ELs have acquired higher levels of English proficiency, teachers may conclude that ELs have learning disabilities without considering other factors that impact reading achievement (e.g., inadequate academic language proficiency, the quality of core reading instruction or the appropriateness of supplemental interventions designed to close reading gaps).

TABLE 1 Shared Characteristics of English Learners and Students with Reading Disabilities

Areas of Difficulty for English Learners and Students with Reading Disabilities	
Oral language development	Text comprehension
Background knowledge	Written expression
Listening comprehension	Spelling
Phonemic awareness	Handwriting
Decoding	Syntax and grammar
Word recognition	Organization
Vocabulary	Memory
Fluency	Motivation

Although the characteristics are similar, they have different root causes. A key issue for ELs is the challenge of learning to read in a language they have yet to master. The process is further complicated when other factors such as cultural differences, socioeconomic status, and socioemotional learning needs are not addressed. While ELs with reading disabilities may face

similar issues, the origins of reading problems are neurobiological differences in the brain that primarily affect the phonological component of language (International Dyslexia Association, 2002). Distinguishing between reading difficulties and disabilities requires understanding relationships between ELs’ oral language proficiency and reading achievement.

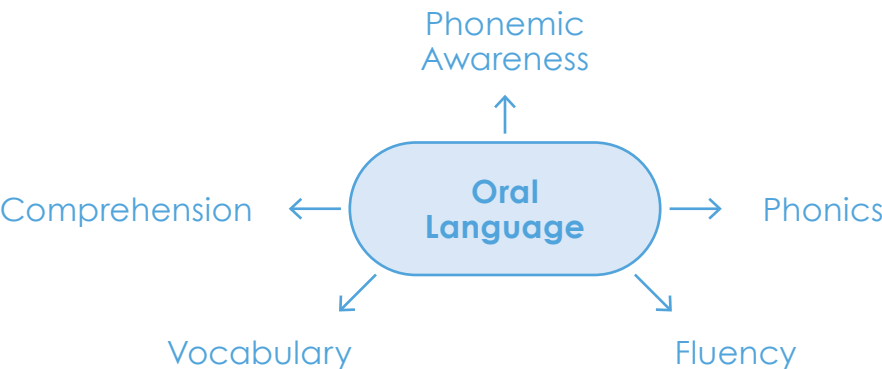
ORAL LANGUAGE AND READING CONNECTIONS

Phonemic awareness, phonics, vocabulary, fluency, and comprehension are essential reading skills for both ELs and non-ELs. However, oral language is the first and most essential skill for ELs who are learning to understand and speak English at the same time they are learning to read it. Oral language is the foundation for reading success and drives progress toward mastery of the other essential reading components.

Oral language is the foundation for reading success and drives progress toward mastery of the other essential reading components.

Oral language includes phonology (i.e., speech sounds), vocabulary, social and academic language proficiency, pragmatics (i.e., how language is used to communicate in different contexts), and knowledge of linguistic structures (e.g., syntax and grammar). ELs with age- and grade-appropriate oral language skills in their home language have the foundation for becoming proficient readers and

FIGURE 1 Essential Elements of Reading Instruction for English Learners



writers if they are provided appropriate, culturally and linguistically responsive (CLR) instruction. They will transfer many of the oral language and literacy skills acquired in the home language to English. On the other hand, ELs with communication difficulties in the home language will have difficulty learning to read in that language as well as in English. Instruction for these students must target development of home language communication skills to build a stronger foundation for reading.

ELs being taught to read in English-only struggle for a variety of reasons. For example, those at beginning levels of English proficiency do not

understand the language of instruction; those with intermediate English skills can communicate effectively in social situations but are still developing academic language skills; and those with advanced proficiency are mastering more complex language structures (e.g., abstract vocabulary, complex sentences, idiomatic expressions, and literary devices). These language factors affect ELs’ decoding and reading comprehension. The key to their success is developing ELs’ oral language proficiency and background knowledge so they can connect their lived experiences to the content they are expected to master.

A PATH TOWARD IDENTIFICATION FOR ELS

Among the most important data in distinguishing second language differences from language and reading disabilities are (a) results of oral language and literacy assessments, (b) evaluation of the quality of instruction targeting the simultaneous development of oral language and reading skills, and (c) the effectiveness of supplemental interventions provided to resolve language and literacy difficulties (Ortiz et al., 2018).

Assessment of Oral Language and Reading Skills

Assessments of ELS with reading difficulties should document their developmental history, provide a record of the language education programs in which they have been enrolled and the language(s) of instruction across grades, and the number of years of language assistance ELS have had (Ortiz et al., 2018). For example, it takes four to seven years to achieve the academic language proficiency required for academic success (Hakuta, 2000); if the EL had only had two years of English as a second language (ESL) support, problems could be explained by an insufficient amount of language

instruction to achieve the advanced levels of English proficiency required to read and comprehend complex text.

Results of valid and reliable oral language and reading assessments allow teachers to answer questions that are important when planning reading instruction and supplemental intervention for individual ELS and groups of ELS:

1. What is this EL's current level of oral language proficiency?
2. What are the student's oral language strengths and needs?
3. What is this EL's current reading level?
4. What are their reading strengths and needs?
5. Does this EL have the oral language skills needed to understand reading instruction, to meaningfully participate in reading lessons, and to meet rigorous reading standards?

Language and literacy assessments should be conducted in the home language and in English. Comparing skills across languages will help teachers distinguish ELS whose reading difficulties are primarily caused by lack of English proficiency from those

who may have dyslexia or other reading disabilities as indicated, for example, when language and reading problems manifest in both languages. When it is not feasible to assess in the home language, teachers must establish baseline English proficiency and then monitor the student's progress in learning English over the course of the school year. Reading performance should always be interpreted in relation to ELS' oral language proficiency.

Reading performance should always be interpreted in relation to ELS' oral language proficiency.

EFFECTIVE CORE INSTRUCTION AND SUPPLEMENTAL INTERVENTION FOR ELS

Distinguishing second language differences from reading disabilities requires documentation that ELS have had access to CLR core language and reading instruction and to supplemental intervention when they experience learning difficulties. Both reading instruction and supplemental intervention must be

- explicit and systematic,
- sequential (from simple to complex),
- cumulative (built on prior knowledge and skills),
- diagnostic (based on data about students' strengths and needs), and
- responsive to students' individual needs.

(International Dyslexia Association, 2015).

In addition, though, core instruction and supplemental intervention must target (a) language objectives that specify the oral language skills ELS need to fully participate in lessons and to meet grade-level English proficiency and reading standards, (b) reading objectives to build foundational skills and to accelerate reading achievement, and (c) content objectives that indicate how ELS will demonstrate what they have

learned (Vogt et al., 2016). Delivery of instruction in English must incorporate English as a second language (ESL) strategies and scaffolds to make lessons understandable to ELS. Depending on students' language proficiency, scaffolds may include using visuals and manipulatives, pre-teaching vocabulary, activating prior knowledge, previewing content in the home language, chunking text, and asking comprehension questions before, during, and after reading.

If ELS continue to exhibit oral language and reading difficulties despite CLR instruction and intervention, a referral to special education should be considered. The referral should be accompanied by data that profile the EL's oral language and reading skills, document the outcomes of core instruction and reading interventions, describe the strategies and scaffolds used to ensure lesson engagement, as well as parents' perspectives on their child's learning problems (Ortiz et al., 2018).

SPECIAL EDUCATION REFERRAL

The special education referral committee should review results of all formal and informal oral language and reading assessments and the student's language and literacy profile. Data reviewed should allow team members to judge whether core instruction and supplemental intervention are aligned with identified needs, sufficiently intense, and whether additional interventions are likely to close achievement gaps. If the conclusion is that general education interventions cannot resolve reading difficulties, then a referral for a full and individual evaluation to determine whether the student qualifies as a student with dyslexia or as a student with a reading disability is the next step. Table 2 presents indicators that support referrals of ELS to special education.

TABLE 2 Indicators of the Presence of Reading Disabilities among English Learners

Indicators	Yes	No
Home language skills are significantly different than those of true peers (i.e., peers who have similar background characteristics in terms of age/grade, cultural background, SES, prior schooling, etc.).		
English skills are significantly different from those of true peers.		
Language goals have not been met despite effective, culturally and linguistically responsive English as a second language instruction.		
Language and reading difficulties persist despite effective, culturally and linguistically responsive core literacy instruction.		
Reading difficulties persist despite differentiation of core instruction to address gaps in oral language and reading skills.		
Oral language and reading difficulties persist despite culturally and linguistically responsive supplemental intervention.		
Multiple data sources (e.g., teachers, formal and informal assessments, report cards) corroborate oral language and reading difficulties.		
Parents report that their child manifests similar oral language and reading difficulties at home as at school.		
Results of the full and individual evaluation (FIE) corroborate teacher, parent and referral committee concerns.		
FIE results corroborate results of universal screenings and progress monitoring measures of ELs' oral language and reading development.		
The student exhibits behaviors commonly associated with the presence of a reading disability (e.g., limited vocabulary, lack of background knowledge, decoding problems, fluency).		
Other explanations for oral language and reading difficulties have been ruled out (e.g., limited English proficiency, limited or interrupted formal education, trauma, illness).		

To identify ELs as students with dyslexia or reading disabilities, results of special education eligibility determinations should corroborate teacher and referral committee concerns and should be consistent with results of universal screenings and progress monitoring measures that have tracked progress in relation to core instruction and supplemental intervention (Ortiz et al., 2018). Data should corroborate that

the language and literacy skills of ELs are significantly different from true peers (i.e., peers with similar language proficiency and schooling histories). Parent reports that their child manifests similar problem behaviors at home as at school and that the behaviors do not meet cultural norms and expectations provide confirmatory evidence of the presence of a disability.

The key to accurately identifying ELs with dyslexia and language-based reading disabilities is to assess both their oral language proficiency and reading performance. These data, along with documentation of the outcomes of culturally and linguistically responsive instruction and intervention, help educators distinguish between ELs who struggle with reading because of lack of English skills versus those whose problems stem from learning disabilities.

ABOUT THE AUTHORS

Alba A. Ortiz, PhD, is Professor Emerita, Department of Special Education, College of Education at The University of Texas at Austin and Co-Executive Director of ELLAS Consulting (English Learner Leadership Advocacy Support). A nationally recognized expert on the education of multilingual learners with language and learning disabilities, her work focuses on the disproportionate representation of multilingual learners in special education, culturally and linguistically responsive multitiered systems of support, and oral language and reading assessment and instruction for multilingual learners with or at risk of disabilities.

Linda Cavazos, PhD, is the Executive Director of ELLAS Consulting (English Learner Leadership Advocacy Support). She is a nationally recognized expert on the science of reading, biliteracy, and effective instruction and intervention for multilingual learners, including those with or at risk of disabilities. Dr. Cavazos provides professional development, technical assistance, and coaching at the national, state, and local levels to improve educational outcomes for multilingual learners and develops tools and resources to support the implementation of effective instructional practices for these students.

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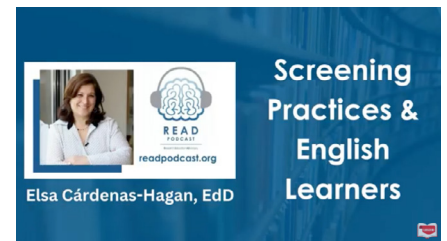
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ON RAMP TO READING

By Alexis Pochna, EdM, Director of The
Windward Institute



INSTRUCTIONAL CYCLE FOR A STRUCTURED LITERACY LESSON



Source: Reading Universe. (2024). Adapted from <https://readinguniverse.org/>

WHAT IS STRUCTURED LITERACY?

Structured Literacy is an evidence-based instructional approach grounded in the science of reading. While the term Structured Literacy was coined in 2014 by the International Dyslexia Association, the principles have been practiced for decades. Unlike less structured methods, Structured Literacy breaks language and literacy skills into manageable units and teaches them explicitly and in a logical sequence to build automatic, fluent, and proficient reading. It is a comprehensive approach that includes a number of key instructional components related to word reading, spelling, comprehension, and written expression (Wilson, 2024).

Structured Literacy is beneficial for all students, with some individuals requiring more intensive instruction and practice for longer durations of time than others. For students with dyslexia, Structured Literacy instruction is recommended five days a week, for a minimum of 45-60 minutes per lesson, over multiple years (Odegard, 2024). For students not making sufficient progress, more intensive interventions with increased instructional dosage and individualized support may be needed to address persistent deficits (Fuchs & Fuchs, 2003).

Imagine trying to learn to drive without formal instruction, where skills like steering, braking, and merging are left to develop naturally. Just as no one would expect a person to become a competent driver without training in vehicle handling, road rules, and safety protocols, it is unreasonable to expect children to learn to read without clear, explicit instruction in essential literacy skills. For most children, especially those with dyslexia and those at risk of reading difficulties, learning to read requires structured, systematic instruction that breaks down the complexities of language and builds the foundational skills necessary for proficient reading and writing. Known as Structured Literacy, this approach is beneficial for all learners and essential for students with dyslexia.

INSTRUCTIONAL IMPERATIVES

Components

- Phonological awareness: Instruction emphasizes recognizing and manipulating sounds in spoken language, including phonemes (individual sounds).
 - Phonics and orthography: Sound-symbol correspondences and spelling patterns are explicitly taught, which supports students in understanding letter-sound relationships and the rules of English spelling.
 - Syllable patterns: The six syllable types in English are systematically taught to help students decode and spell words by breaking them into parts.
 - Morphology: Instruction is provided in morphemes, the smallest units of meaning in language, including instruction in roots, prefixes, and suffixes. Students learn to analyze word structures, which aids decoding, spelling, and comprehension.
 - Syntax: Teaching focuses on the structure of language, sentence formation, and how words combine to create phrases and sentences. Instruction includes understanding both simple and complex sentence structures.
 - Comprehension: Instruction covers meaning at multiple levels and addresses vocabulary; sentence- and passage-level comprehension; and overall text-level understanding, including knowledge of text structure and critical thinking.
 - Written expression: Integrating writing with reading instruction supports the development of reading proficiency. Intentional writing instruction encompasses handwriting, sentence formation, print conventions, and composition.
- (Moats 2019, 2020; Spear-Swerling 2018, 2022; Wilson, 2024)

Methodology

Structured Literacy utilizes explicit, systematic instructional techniques. Lessons are carefully sequenced and cumulative, with ample opportunities for practice. Through frequent progress monitoring, teachers assess individual needs and plan for diagnostic instruction (Moats, 2020; Spear-Swerling, 2022).

Explicit

Explicit instruction involves directly teaching specific skills with clear explanations, modeling, and guided

practice. For example, when teaching the *-tion* suffix, a teacher first explains that *-tion* is pronounced /*shun*/ and that it typically turns verbs into nouns (*educate* becomes *education*). The teacher then models how to read and break down words ending in *-tion*. Following this, students engage in guided practice, spelling and reading *-tion* words, while the teacher provides immediate corrective feedback. This step-by-step approach to skill instruction ensures that students understand how the suffix works and can apply it when reading and spelling new words (Archer & Hughes, 2011; Moats, 2020).

Systematic

Systematic instruction teaches skills in a logical, step-by-step order, where each new skill builds on previously learned concepts. For example, a teacher might first teach students how to decode CVC (consonant-vowel-consonant) words (*cat*, *pin*). Once students have mastered this pattern, the teacher introduces words with consonant digraphs (*bath*, *ship*), followed by blends (*stop*, *bend*). Words with more complex syllable patterns, like silent-*e* (*tune*, *cape*) are introduced after students have established a strong foundation in the preceding skills in the

instructional sequence. This cumulative approach ensures that students build on existing knowledge, master essential skills, and avoid problematic learning gaps (Moats, 2020; Spear-Swerling, 2022).

Diagnostic

Diagnostic instruction involves monitoring student progress continuously to assess skill development and adjust instruction accordingly. Through regular progress monitoring, teachers identify skills to review, reinforce, and reteach. For instance, if students are struggling with the previously taught vowel team *ea*, as in *read*, the teacher can revisit and reinforce that specific skill. This approach ensures that areas of difficulty are addressed immediately and that instruction remains responsive and targeted (Fuchs & Fuchs, 2003; Moats, 2020).

“Structured Literacy is Exemplified by an Explicit Approach to Teaching” by Tim Odegard, in *Perspectives on Language and Literacy*, 2020, p. 22:

SL Principles of Explicit Instruction	
Directly Teach Skills and Concepts	All skills and concepts are directly taught in manageable chunks at a pace of instruction determined by a child’s rate of learning.
Sequence of Instruction	Concepts and skills are directly taught in a logical progression from more basic concepts to more difficult concepts. The sequence of instruction is informed by the structure of the language.
Hands-on and Engaging	Students are actively engaged in the learning. They are expected to respond to pointed questions and demonstrate skills acquisition.
Deliberate Practice	Students are provided with deliberate massed and spaced practice.
Corrective Feedback	Students are provided with immediate corrective feedback.
Diagnostic and Responsive	Student understanding of concepts is constantly monitored and used to inform instruction.
Application of What is Taught	Ample opportunities to apply what is learned to read connected text with expression to acquire meaning and knowledge.

MORE THAN JUST PHONICS

Structured Literacy is sometimes misrepresented as a phonics-only approach to teaching reading. In actuality, Structured Literacy is a comprehensive approach that goes well beyond phonics to address a broad spectrum of literacy and language skills.

Comprehension and Vocabulary

The goal of skilled reading is to understand the text that is read. While foundational decoding skills are essential, effective literacy instruction must also explicitly target reading comprehension. Additionally, many students with dyslexia will continue to struggle with comprehension even after making gains in decoding, often due to co-occurring language-based difficulties, such as developmental language disorder (DLD), which affects oral language and comprehension skills (Catts et al., 2006).

Comprehension instruction should be explicit, systematic, and embedded within authentic reading experiences. Strategies such as activating background knowledge, asking and answering questions, summarizing, and utilizing text structure are most effective when taught in the context of meaningful

reading tasks (Catts, 2021; Wanzek et al., 2010). Vocabulary knowledge supports text understanding, and direct, explicit instruction in word meanings and the application of word knowledge in context improves both vocabulary acquisition and reading comprehension (National Reading Panel, 2000; Beck et al., 2013).

Writing Instruction

Strong writing instruction is vital to literacy development and has been shown to improve reading comprehension, fluency, and word reading (Graham & Hebert, 2011). Students with dyslexia often struggle to express their thoughts clearly in writing and face challenges with spelling, sentence structure, and organizing information and ideas. Without proper support, these difficulties can hinder academic progress across subject areas (Graham & Perin, 2007).

As with reading instruction, effective writing instruction for students with dyslexia needs to be explicit and step by step. Instruction begins with sentence-level skills, including conventions such as capitalization, before progressing to organizing and drafting paragraphs and essays. Teaching outlining skills helps students structure their ideas clearly to create organized, cohesive compositions.

A focus on revising and editing gives students opportunities to refine their work, apply feedback, and strengthen their writing skills over time (Graham & Harris, 2016).

EXPANDING THE REACH

Structured Literacy is a powerful instructional approach that benefits a wide range of learners, including students from under-resourced communities and English learners (ELs). These students often face significant challenges with regard to literacy learning and development, including limited access to evidence-based reading instruction. Structured Literacy's explicit, systematic, and cumulative approach provides all students with consistent, research-based teaching. For ELs, Structured Literacy with attention to cross-language connections is especially impactful. For example, drawing connections to the sounds in a student's native language that directly transfer to English and to cognates, words similar in meaning across languages, bolsters learning (Cárdenas-Hagan, 2024).

High-quality instructional materials are an important aspect of Structured Literacy programs and a fundamental component of any discussion on access.

These materials are thoughtfully designed to build knowledge and skills progressively, create coherence, and support both language and content learning. By ensuring that all students receive high-quality instruction and materials, thoughtfully-delivered Structured Literacy programs have the potential to help close literacy gaps and promote increased educational equity (Odegard, 2020).

FULL SPEED AHEAD

Students with dyslexia and those at risk for reading difficulties require explicit, systematic, and cumulative instruction to develop the foundational skills necessary for reading success—much like a new driver needs clear, step-by-step instructions to learn to navigate the complexities of the road. Structured Literacy is the most effective approach for teaching these students. Moreover, the benefits of Structured Literacy extend to a wide range of learners, including those who often face barriers to accessing quality literacy instruction. Given the abundance of evidence supporting Structured Literacy, educators and policymakers must take proactive steps to ensure that this powerful instructional approach is implemented

widely and that students with dyslexia receive the early, robust, and sustained instruction they need. Structured Literacy, delivered with fidelity by highly trained teachers, is a vital aspect of any educational system committed to reading success for all learners.

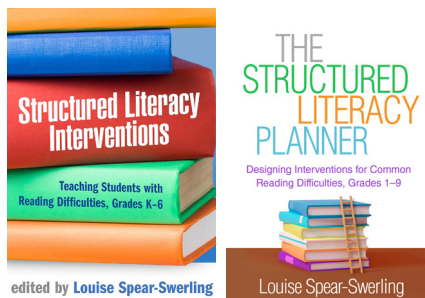
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Q&A WITH **TIM ODEGARD** - VARIABILITY IN INDIVIDUAL RESPONSE TO INTERVENTIONS

By Danielle Gomez, EdD, Research and Outreach
Director at The Windward Institute
and Jana Cook, Associate Director of
Marketing and Communications





You've had a long history in advocacy for people with dyslexia, from research to teacher training. Understanding dyslexia is deeply personal for you as a person with dyslexia. Can you tell us more about your journey into this area of research and advocacy?

A:

Tim Odegard, PhD, is a member of The Windward Institute Advisory Board, Professor of Psychology, and the Katherine Davis Murfree Chair of Excellence in Dyslexic Studies at Middle Tennessee State University, where he leads the Tennessee Center for the Study and Treatment of Dyslexia. He serves as Editor-in-Chief of the *Annals of Dyslexia* and as a consulting editor for the *Journal of Learning Disabilities*. Previously, he was an editor at large for *Perspectives on Language and Literacy*. A contributing author to the International Dyslexia Association's Knowledge and Practice Standards for Teachers of Reading, Dr. Odegard is committed to advancing literacy as a fundamental human right. His work supports initiatives across the U.S. and Canada through service leadership. Among his many honors, Dr. Odegard has received the Innovator Award from IMSLEC, the Luke Waits Service Award from ALTA, the Massey-Sexton Dyslexia Advocacy Award from the Tennessee IDA, the AIM Institute Founder's Award, and the Research Excellence Award from the University of Texas, Arlington.

It's a very personal journey for me. In my training and PhD work, I initially kept reading, literacy, and dyslexia at an arm's length. I was trained as a psychological scientist at that time when cognitive neuroscience was just on the verge of taking shape. We were just starting to use functional MRI studies when I was in grad school, and these weren't widespread tools.

I became an expert in eyewitness memory of children, which included memory research and false memory research, and I was trained by some of the leading scholars in this area. I even had funding from the first year of my postdoc and developed protocols for childhood eyewitness memory. During this time, I started to understand how to think beyond objective research and include lived experiences and voices in the research I was pursuing. The Innocence Project and the work of Saul Kassin and others is a prime example from forensic psychology about the power of narrative and lived realities. We could have kept doing empirical studies of eyewitness memory and how lineups were conducted. But the work Saul and others did to share the lived realities of how the system got it wrong and the consequences were much more powerful.

While I was training in neuroimaging to conduct memory research, I became curious about diving deeper into understanding dyslexia and the related intervention research. I had the opportunity to become clinically trained through a two-year internship on intensive Structured Literacy interventions through a pediatric hospital. I was able to talk to the teachers to hear their real-world experiences.

I collaborated with the education development team at the hospital that I was training at, and we developed early brain-imaging studies of students with dyslexia to understand their response to interventions. Among our findings from these early studies were some of the first white matter studies and connectivity studies that were done. This was made possible because I was part of a development team that was working with MRI developers to create and improve MRI technology at that time. So I had access to MRI sequences that were still under development.

These experiences were born out of my passion to do what we call the full cycle of psychological science as coined by Robert Cialdini—to translate from the lab into practice and then learn from practice to further understand our work in the lab.



You have led and collaborated on research pertaining to literacy interventions for children with dyslexia. Can you highlight research findings that reveal overall or average positive effects of literacy interventions for children with dyslexia?

A:

Dr. Colby Hall and colleagues' 2023 meta-analysis, "Forty Years of Reading Intervention Research for Elementary Students with or at Risk for Dyslexia: A Systematic Review and Meta-Analysis" highlights the response to interventions on literacy gains for children with dyslexia. The research is finding that those of us with dyslexia, or who are challenging to teach, will learn to read. We are worth the investment and we can make a meaningful contribution in this aspect of society. I feel that it's unjust and unethical to deny a life skill because we have structured our society to where without literacy, you don't have access to employment, to healthcare, or happiness in the same way.

This meta-analysis looked at 40 years of research in the domains of multi-component interventions on children with dyslexia and other profoundly

struggling readers. One key domain was instruction on phonological awareness. It had a large effect size. Now, there were some caveats the authors highlight. We do know that phonological awareness instruction is important. We also know that linking it to letters is also important. Word reading, spelling instruction, and opportunities for reading connected text also have a meaningful educational effect on the outcomes. I want to stress here that that would be a varied type of reading. We have learned from Dr. Maureen Lovett's research in particular about the importance of skill transfer, and that exposure to text is critical. A focus on writing also benefits students. In dyslexia interventions, we focus so much on the reading side that we often don't emphasize practice in spelling and written expression. Overall, the research is showing positive outcomes when word reading and spelling are done together.

Dr. Hall and colleagues also cite building reading comprehension as important in their 2023 meta-analysis. When I go into schools and I look at certain programs, I see the benefit of experiences for connected text reading, as well as opportunities for learning and modeling how to extract and monitor for meaning. That's different than teaching reading comprehension strategies. It's more about giving students the opportunity to monitor their comprehension, derive vocabulary, learn, and process from the content in the text. This might be viewed as a strategy by some, but it is also how an engaged reader interacts with a text. Those of us who are effortless in our comprehension skills and abilities can come to take for granted that what is effortless and automatic for us might be far more challenging for others.

Q:

You are a leader in shaping and championing the work of others in a variety of roles, including Editor-in-Chief of *Annals of Dyslexia* and the Murfree Chair of Excellence in Dyslexic Studies at Middle Tennessee State University. What are you planning to emphasize in these roles to spotlight and lift the voices of others making an impact in the field?

A:

I want to cultivate a time where we can move past the dyslexia paradox and the dyslexia debate. They're not helpful to the members of my community. It's undeniable at this point that there is a subpopulation of our world for whom it's really hard to learn how to read and spell words. We will learn those fundamental literacy skills if we're given the proper multicomponent intervention and sufficient dosage over a sustained period of time. At the same time, we also need social support to understand how we fit and who we are in the larger society and how to advocate for ourselves. A lot of the work like you do at The Windward School is not done and talked about enough.

When it comes to research, I hope the research community starts measuring spelling a lot more. I'm sad to say that the 2000 definition that IDA adopted included spelling, and one of the main purposes of that was to drive research. When I've looked at and systematically reviewed the research since then, they very rarely include spelling as an outcome measure. I see ample reason to study it more, understand it, and learn from what Dr. Hall and colleagues' recent analysis showed us. And ironically, they did not have enough studies with spelling to even look at the impact of these interventions on spelling. Our lived experience and our clinical experience as interventionists, trainers, or supervisors of instructional implementation shows us that we know

that spelling outcomes on average are not responding as well as word reading. We need our eyes on the research moving forward because without this data, I don't know how to modify and start to try different interventions and experimental models to improve the spelling outcomes.

The other thing that I want us to do from an advocacy standpoint is to share the evidence of the inheritable nature of dyslexia that has been shown from family linkage studies over the last 40 or 50 years. We know that family history of a first-degree relative is one of the biggest risk indicators of developing dyslexia when we adopt more of a risk calculation model in early childhood. That's undeniable.



Can you share two or three final thoughts with educators or caregivers of children with dyslexia?

A:

Identify risk early, but don't take a deterministic mindset. It's not fair to a child to wait to identify their risks. At the same time, not everybody at risk is going to be a pervasive struggling reader. It's also not fair to a child to label them so early with something that's as large as dyslexia. We need to teach parents like myself about the importance of identifying risks and to clarify that a risk does not necessarily mean a diagnosed disability.

And if you don't have rigorous Structured Literacy with good differentiation in the core instruction, a majority of children will start to struggle. Even with simple word forms, students will begin to fall off and have difficulty. Therefore, we need to prioritize the identification of sustained word reading and spelling challenges to expedite access to more intensive intervention with tracking and progress monitoring. It's important for parents and educators to be aware of these processes and what it means to have a risk prevention model for all students.

My call for the researchers and others across education is to understand that we all have more to learn. If you're a researcher, an educator, an educational leader, State Department of Education official, a parent: We all have far more to learn. By listening to one another, we are going to raise our knowledge, allowing us to collectively gain common ground and develop a shared vision for change for all children.



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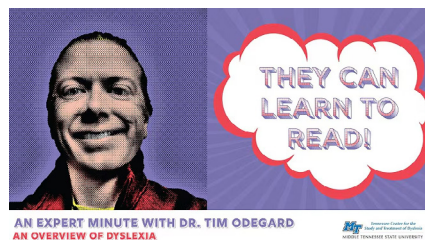
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HOW THE SCIENCE OF READING CAN DELIVER ON ITS PROMISE

By John J. Russell, EdD



Research supporting the science of reading has been advancing for over a half century; however, it is only very recently that schools and school districts have attempted to adopt instructional practices supported by this ever-evolving body of evidence. Spurred on by the reporting of journalists like Emily Hanford (2022), the recent rapid advance of the science of reading into classrooms across the United States has been nothing short of phenomenal. Recognizing the potential for instructional practices based on the science of reading to improve literacy outcomes for all students, including students with dyslexia, 32 states have passed laws or implemented new policies related to evidence-based reading instruction within the last decade (Holston, 2024). Legislation addressing dyslexia has also seen a rapid—but uneven—increase in regulations:

49 States Have Passed Dyslexia Legislation

40 states and DC
require screening

31 states and DC
require intervention

14 states require
pre-service training

29 states & DC
require in-service
training

9 states require
screening,
intervention, and
pre- and in-service
training

*Source: U.S. Department
of Education. (2023).*

As the body of knowledge known as the science of reading continues to evolve and research expands our understanding of dyslexia, schools are racing to establish instructional practices that are consistent with these findings. There is also reason to expect that, across the United States, the number of students—including students with dyslexia—who can read proficiently will increase dramatically. There is cause for optimism as well as caution.

These high aspirations must be tempered by the reality that there is much to be done to safeguard that future students are taught to read using practices that are based on an accurate understanding of the science of reading. We cannot afford to repeat the educational malpractice of the past, when dedicated teachers were “sold a story” (Hanford, 2022) about how to teach children to read; taxpayers sunk billions of dollars into an education system that produced decades of dismal results; and, most tragically, millions of students never attained the skills that they needed to become proficient readers. Nor can we afford misinterpretation and misapplication of the research that forms the science of reading.

THE SCIENCE OF READING: WHAT IT ISN'T

Educators, policymakers, families, and the general public are being exposed to multiple interpretations of the science of reading. In an interview conducted by the Regional Educational Laboratory (2024), Tim Shanahan cautioned about the potential misapplication of the term “science of reading.” He reminds us that “many articles on reading education are no more than opinions or recounts of personal experience, and as such, they are not part of the science of reading.”

Even when educators can discern authentic, scientifically based research, they most likely do not have the ability to translate basic research into effective classroom practice. Solari and her colleagues (2020, p. 1) contend that “a profound gap exists between empirical findings and the implementation of evidence-based practices in the assessment and instruction of reading in school settings. The debate regarding the practical implications of the science of reading (SOR) and its implementation in authentic school settings is palpable.” To be clear, cognitive scientists and neuroscientists have made huge strides in explaining how the brain learns to read (Seidenberg, 2017; Dehaene, 2010),

but this basic research on how reading develops in the brain is not easily translated into effective instructional practices in the classroom (Shanahan, 2020; Seidenberg, 2020).

HOW CAN STAKEHOLDERS OVERCOME THESE BARRIERS TO IMPLEMENTING THE SCIENCE OF READING AT SCALE?

In addition to a lack of a clear understanding of the research base of the science of reading and teachers’ lack of knowledge regarding effective instructional strategies for students with dyslexia, there are numerous other obstacles that make implementing evidence-based research in schools challenging. While high-quality reading research has been and continues to be conducted in tightly controlled settings, these obstacles have caused educators and policy makers to be less successful in adequately translating these findings to classroom practice at scale (Solari et al., 2020).

Many organizations and individuals have opined regarding what state policymakers, school district administrators, and teachers can do to ensure that the science of reading delivers on its potential to improve reading outcomes for all students, including struggling readers and those with dyslexia. A few of the more salient recommendations follow.

State Policymakers

Acknowledging decades of evidence that strong reading instruction improves academic outcomes for children, states passed laws or implemented new policies related to the science of reading and dyslexia. After years of stagnation, this legislative push is long overdue; however, nearly every state should take further steps to adopt policies and practices that focus on the implementation and sustainability of the science of reading in actual classrooms.

Recommendations for state policymakers

- Focus on the key to strong implementation and long-term sustainability: effective teachers (Hanushek, 2014).
- Set specific, detailed reading standards for teacher prep programs that are aligned with the science of reading, including how to teach English learners, struggling readers, and those with dyslexia (The Reading League, 2024).
- Strengthen licensure exams. “...more than half of states use a weak licensure test that fails to adequately measure elementary teachers’ knowledge of scientifically based reading instruction” (Putman, 2024).
- Involve stakeholders in the design of new policies and implement these policy changes gradually so that stakeholders, particularly teachers, are more invested and more likely to follow new laws and policies (Center for Community Health and Development, 2024).
- Mandate data-driven and evidence-based approaches that account for all components of reading: phonological awareness, phonics, fluency, vocabulary, and comprehension (National Reading Panel, 2000).
- Evaluate and disseminate outcomes (NCTQ, 2024).
- Require districts to select reading curriculums that are based on the science of reading. These instructional materials are the primary resources that teachers use to deliver instruction. Ideally, they should provide teachers with access to grade-level content standards and support a consistent sequence and progression of grade-appropriate knowledge and skills that are based on the science of reading (The Reading League, 2024).
- Require screening, intervention, pre-service training and in-service training for dyslexia (U.S. Department of Education, 2023).
- Provide financial resources and technical assistance materials for school districts to use. Technical assistance materials and resources related to students with dyslexia can include practice briefs to guide instruction, fact sheets that highlight a multi-tiered system of supports (MTSS) or other key approaches to supporting students with dyslexia, and tools that support teachers in their implementation or data collection.

For an in-depth exploration of pre-service teacher training programs in the U.S., see “The State of the Union: Teacher Preparation Programs in the U.S.” in the 2024 issue of *The Beacon*.



School District Leaders

There is still a significant disconnect between the preparation teachers need to be successful and the preparation they actually receive in their pre-service and graduate education courses (Solari et al., 2020). Teacher preparation programs simply do not sufficiently prepare new teachers for the classroom, and state licensing examinations are not rigorous enough to protect students from teachers who are ill-equipped to teach reading in general education classrooms and special education classrooms (NCTQ, 2024). In school districts and schools across the nation, there has been an increasing awareness of the inadequacy of teacher preparation programs and the deficits that smart, conscientious teachers bring with them simply because they did not receive proper training at their colleges and universities. For example, to teach reading effectively, teachers must be knowledgeable of oral and written language concepts as well as the most effective research-based instructional practices (Budin, Mather, & Cheesman, 2010; Seidenberg, 2020). Unfortunately, still too many undergraduate and graduate education programs are not providing teachers with this knowledge. According to one estimate, if elementary teachers implement scientifically based reading instruction, more than 90% of students, including students with

dyslexia, can learn to read proficiently (Moats, 2020). But we won't achieve this goal unless teachers are given the knowledge, skills, instructional materials, and professional learning they need to be successful.

Recommendations for district leaders

- Use evidence-based approaches to screen, identify, and teach students with literacy-related disabilities, including dyslexia (The National Center on Improving Literacy, 2024).
- Implement an MTSS. An MTSS is a proactive and preventive problem-solving approach for providing high-quality instruction and intervention across intensifying tiers: core instruction (Tier 1), targeted intervention (Tier 2), and intensive intervention (Tier 3) (U.S. Department of Education, 2023).
- Require data-driven and evidence-based approaches that consider all components of reading (e.g., phonological awareness, phonics, fluency, vocabulary, and comprehension) (National Reading Panel, 2000).
- Develop educator competencies in dyslexia by providing targeted in-service training (U.S. Department of Education, 2023).
- Strengthen professional development. Teachers who are well prepared in scientifically based reading instruction are fundamental to the implementation and sustainability of the science of reading. If teachers have the knowledge and skills to teach reading, they can increase their impact on children's literacy (NCTQ, 2024).
- Conduct a thorough system-wide audit of curriculum materials. Choose reading programs that are based on the science of reading. Comprehensive reading programs are grounded on scientifically based reading research, with all components of the program carefully aligned so that instruction is seamlessly organized (Churchill, 2023).
- Allocate sufficient funds in budgets to support the implementation of the science of reading for general education students and students with dyslexia.
- Ensure that the entire school community is adequately informed about the science of reading and district reading outcomes.

Building administrators and teachers

Louisa Moats (2020) stressed the importance of what takes place in classrooms in order for the successful implementation of the science of reading:

The tragedy here is that most reading failure is unnecessary. We now know that classroom teaching itself, when it includes a range of research-based components and practices, can prevent and mitigate reading difficulty. Although home factors do influence how well and how soon students read, informed classroom instruction that targets specific language, cognitive, and reading skills beginning in kindergarten enhances success for all but a very small percentage of students with learning disabilities or severe dyslexia. (para. 6)

Recommendations for building administrators and teachers

- Provide ongoing coaching support in classrooms (Goodnight et al., 2020).
- Encourage teacher collaboration and self-assessment (DeVries et al., 2020).
- Redesign schedules allocating sufficient time for reading and language arts in the daily schedule, including a rotated intervention block across grade levels to provide MTSS (Mortensen, 2022).
- Deliver instruction that is explicit, systematic, and multimodal to students with dyslexia. Research indicates that explicit and systematic instruction that addresses both the code-based dimension of reading and writing and the meaning-based dimension improves foundational reading skills (Al Otaiba et al., 2021).
- Teach the foundational skills of reading (phonemic awareness, phonics, vocabulary, fluency, and language comprehension) systematically and explicitly (National Reading Panel, 2000).
- Conduct regular assessments of student progress (progress monitoring) throughout the school year, using valid and reliable classroom-based instructional assessments to determine whether reading skills have been achieved (Armbruster et al., 2020).
- Balance instruction in foundational skills with teaching decoding, fluency, and reading comprehension (Shanahan, 2024).
- Integrate writing and reading. Graham and Hebert (2011) present evidence that writing about material read improves students' comprehension of it; teaching students how to write improves their reading comprehension, reading fluency, and word reading; and increasing how much students write enhances their reading comprehension.
- Use trusted sources for guidance on implementing the science of reading, such as the What Works Clearinghouse, part of the Institute of Education Sciences of the U.S. Department of Education; or The Best Evidence Encyclopedia (BEE), a free resource created by the Johns Hopkins University School of Education's Center for Research and Reform in Education. Both provide educators and researchers information about the strength of the evidence supporting a variety of programs available for students in grades K-12.

Not being able to read proficiently can have a devastating impact on an individual’s life. The science of reading holds the potential for vastly more general education students and students with dyslexia to become proficient readers. But translating the 50 years of research that is the science of reading into classroom practice is no simple matter. The examples provided here	focus on a few of the concrete steps that key stakeholders can take to help ensure that the instruction students receive in classrooms is consistent with the research that makes up the science of reading. To be successful in the long term, educators and policymakers must establish that the instructional programs and practices that they are utilizing are in fact research based; are appropriate	for their students; and are implemented with fidelity. To accomplish this ambitious agenda, resources and support must flow from the state and district to the students and teachers. After years of effort trying to reform educational practices that failed far too many students, let’s not squander the promise that the science of reading holds.
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ABOUT THE AUTHOR	John J. Russell, EdD is the associate director of The Haskins Global Literacy Hub, an associate research professor at the University of Connecticut, and a lecturer at Yale University. Before becoming associate director of the Haskins Global Literacy Hub, he served as executive director of The Windward Institute and, for thirteen years, he was head of The Windward School. Dr. Russell also served as superintendent of schools in Westchester County, New York. His research interests include language-based learning disabilities, research-based instructional practices, and organizational theory. Dr. Russell has presented on these topics at national and international conferences.
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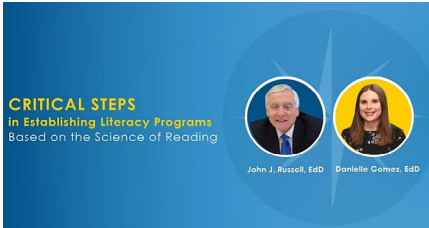
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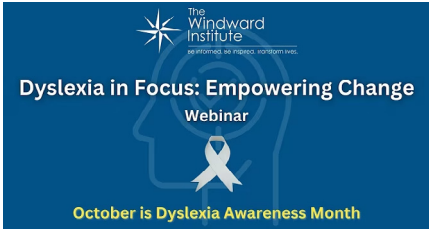
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LEVERAGING TECHNOLOGY TO EMPOWER STUDENTS WITH DYSLEXIA

By Joan McGettigan, EdD,
Director of Educational
Technology



The journey of understanding dyslexia and other language-based learning disabilities is a profound narrative woven through the threads of human experience—one that illuminates the resilience of the mind and the innovative spirit of educators and researchers alike. This exploration is not merely an academic one; it is a testament to the collective commitment to ensuring that every learner can navigate the complexities of language and expression. The intersection of technology and education reflects a level of innovation that resonates with a shift toward understanding and inclusivity. In terms of dyslexia and other language-based learning disabilities, we find ourselves at the forefront of a technological revolution that can effectively redefine the learning landscape. In this era of discovery, artificial intelligence (AI) and assistive technology (AT) can emerge as powerful allies to evidence-based instruction and interventions, helping to transform challenges into pathways for growth. By harnessing these advancements, we can reframe barriers into bridges of possibility, enabling all students to unlock their potential and share their unique stories with the world.

AI: PERSONALIZING LEARNING

AI is rapidly changing education, particularly for students with learning disabilities such as dyslexia. Panjwani-Charania and Zhai (2024) conducted a systematic review that explored the effectiveness of AI-driven tools for students with learning disabilities, finding that AI can analyze individual learning patterns to provide tailored content, pacing, and feedback. This level of personalization has proven critical for this population of students, as it allows them to progress at their own pace, building both confidence and efficacy. The review highlights AI-based programs: for example, read-aloud tools—such as speech-to-text tools that read aloud what is on the screen—and adaptive reading platforms—such as Immersive Reader, which can change the font size, spacing between letters, number of lines of text, and text background. These AI-driven tools create a more inclusive environment where students with dyslexia can thrive alongside their peers.

TEXT-TO-SPEECH (TTS) AND SPEECH-TO-TEXT (STT) TOOLS: ENHANCING LITERACY SKILLS

Text-to-speech (TTS) and speech-to-text (STT) technologies have been instrumental in supporting students with dyslexia, particularly in reading and writing. TTS systems, which convert written text into spoken words, allow students to listen to content that might otherwise be difficult for them to read. This technology supports reading comprehension by reducing the cognitive load required for decoding and allows students to focus on understanding the material.

Text-to-speech technology supports reading comprehension by reducing the cognitive load required for decoding and allows students to focus on understanding the material.

ASSISTIVE TECHNOLOGY (AT): POWERFUL TOOLS

A meta-analysis by Wood et al. (2018) examined the use of TTS tools among students with reading disabilities. The results showed significant improvements in reading comprehension, with students able to process and retain information more effectively when listening to the text rather than reading it. This approach is particularly beneficial for students who experience severe decoding difficulties, allowing them to engage with grade-level texts without being hindered by their reading challenges.

Similarly, STT tools enable students to verbalize their thoughts and have them converted into written text, bypassing the mechanical challenges of writing that many students with dyslexia face. Almgren Bäck et al. (2023) conducted a study focusing on the use of STT technology over a five-year period, revealing that students who used STT tools demonstrated significant improvements in writing quality and output. For students who struggle with spelling, grammar, and sentence structure, these tools provide a means of expressing their ideas without being bogged down by the mechanics of writing.

Assistive technology (AT) has long been a valuable resource for students with dyslexia, providing tools that help them overcome the barriers associated with reading and writing. These technologies range from simple tools, such as electronic graphic organizers, to more advanced software, like word prediction and digital note-taking systems.

According to Almgren Bäck et al. (2023), students using these tools report significant improvements in their ability to plan, organize, and execute writing tasks. Electronic graphic organizers, for instance, help students visually structure their ideas before writing, which is especially beneficial for those who struggle with organization. Research shows that students with learning disabilities who use these tools produce more coherent and well-organized essays compared to those who rely on traditional methods (Svensson et al., 2023).

Word prediction software is another AT tool that helps students with dyslexia by suggesting words as they type. This feature not only speeds up the writing process but also reduces the cognitive load associated with spelling and word retrieval. For many students with literacy-related challenges, the mere act of writing can be daunting due to

spelling difficulties; word prediction software minimizes these barriers, allowing them to focus on the content of their writing.

UNIVERSAL DESIGN FOR LEARNING (UDL): INCLUSIVE LEARNING ENVIRONMENTS

The concept of Universal Design for Learning (UDL) (CAST, n.d.) has gained traction as educators work to create more inclusive classrooms that accommodate a wide range of learning styles and abilities. UDL emphasizes providing multiple means of engagement, representation, and action/expression, which is critical for students with learning disabilities like dyslexia.

Strobel et al. (2007) explore how UDL can be integrated with assistive technologies to support students with dyslexia. By embedding AT tools such as TTS and graphic organizers into the curriculum, educators can offer students multiple ways to access and process information. This approach not only benefits students with dyslexia but also supports other learners who may have diverse needs. For instance, providing auditory and visual representations of information can help all students—regardless of their reading ability—engage with the material more effectively.

One of the most significant benefits of UDL is its focus on removing barriers to learning. By integrating AT tools from the outset, educators can create a learning environment where all students can succeed without an overreliance on individual accommodations.

OUTCOMES OF AI AND AT FOR STUDENTS WITH DYSLEXIA

A growing body of research supports the effectiveness of both AI and AT in improving educational outcomes for students with dyslexia. In a cluster randomized control trial, Hurwitz and Vanacore (2023) found that elementary students with reading and language-based learning disabilities who used educational technologies to supplement reading instruction showed significant improvements in decoding and fluency compared to their peers who did not use such tools. This study highlighted the importance of early intervention, showing that incorporating these supplemental technologies at a young age can help mitigate the long-term impacts of dyslexia.

Svensson et al. (2023) conducted a systematic review that examined the impact of assistive technology on students with reading and writing disabilities.

The University of Texas at Austin
Center for Teaching and Learning

Developed by Shavonne Coleman
Adapted from CAST UDL Guidelines 2021

UDL Key

- Engagement
- Representation
- Action & Expression
- [Accessible link](#)

UNIVERSAL DESIGN FOR LEARNING

The UDL framework embraces Learner Variability. This means every student has different strengths & weaknesses and that there is no such thing as an average learner. Shape your learning environment and pedagogy with this in mind, every learner is unique and that each strength and weakness is an asset to your learning community.

Provide **1** more way of learning to happen

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UDL Provides Multiple Means of

ENGAGEMENT
The *WHY* of Learning

REPRESENTATION
The *WHAT* of Learning

ACTION & EXPRESSIONS
The *HOW* of Learning

What methods can I utilize in my Learning Environment?

Recruiting Interest Why learners get involved?	Perception What learners utilize to perceive course content	Physical Action How learners navigate/interact with curriculum
Facilitate a student developed community through peer-to-peer, collaborative, or service-learning .	Use tools* like Trello, Google Jamboard, FlipGrid, or Graph Builder to vary the layout of information.	Provide options for students to physically interact with materials and content.
Develop class expectations or community agreements with learners.	Consider the contrast between background and text or image	Invite students to engage or respond to materials through the chat function, visual signals, or tools that employ voice commands or comments.
Utilize topics and objectives focusing on student interests	Remember Google slides and Zoom have closed captioning included	Provide alternate keyboard commands, tablet/cell phone navigation for mouse action
Invite students to bring in oral or visual narratives to make connections to course content	Notify students that you allow speech-to-text	Consider only requiring software and apps that work with keyboard alternatives, alt keys, and multiple devices
Facilitate student driven course design allowing for student autonomy and agency	Provide written transcripts for videos or auditory clips	
Cultivate student designed rubrics and assessments	Use visual signs or tactile cues for alerts or organization (i.e., who speaks next)	
Create a Student-Centered environment through project-based learning or flipped classrooms	Follow accessibility standards (NIMAS) when creating digital text. UDOIT can be a helpful tool when thinking about accessibility	

Source: Center for Teaching and Learning, The University of Texas at Austin. (2021).

The findings were overwhelmingly positive, with students reporting improved academic performance, reduced anxiety related to schoolwork, and increased engagement in the classroom. The review emphasized that by providing students with alternative ways to access and produce information, AT helps level the playing field for learners with dyslexia. Wood et al. (2018) found that students who used TTS tools not only improved their reading comprehension but also developed a greater sense of independence and self-efficacy. This sense of autonomy is particularly important for students with dyslexia, as it allows them to take control of their learning.

ETHICAL CONSIDERATIONS

While the benefits of AI and AT for students with dyslexia are clear, ethical considerations must guide their implementation. Johnson and Lee (2022) discuss the need to ensure that AI technologies are designed with equity in mind, particularly when it comes to data privacy and algorithmic bias. As AI tools become more prevalent in educational settings, it is essential to ensure that they are accessible to all students and do not inadvertently reinforce existing inequalities.

Additionally, educators must receive adequate training to use AI and AT tools effectively. Without proper professional development, there is a risk that these technologies could be misused or underutilized, leading to a negative impact on student outcomes. Strobel et al. (2007) emphasize the need for ongoing training programs that equip educators with the skills they need to integrate these tools into their classrooms in a way that aligns with best practices in pedagogy.

THE INTERSECTION OF AI, AT, AND EXECUTIVE FUNCTIONING

In addition to supporting reading and writing skills, AI and AT can also help strengthen executive functioning in students with dyslexia. Research has shown that students with dyslexia often struggle with executive functioning deficits, which further complicates their learning experience (Panjwani-Charania & Zhai, 2024). These tools offer scaffolding for tasks such as organization, planning, and time management. For example, digital planners and task management apps help students break assignments into manageable steps and set reminders, ensuring they can stay organized and meet deadlines.

Panjwani-Charania and Zhai (2024) emphasize that AI tools designed for task management can improve self-regulation and task completion for students with learning disabilities. By offering real-time feedback and progress tracking, these tools empower students to manage their academic responsibilities more effectively. Dawson et al. (2019) further highlight how AT tools that provide structure and visual aids can help students with dyslexia develop stronger organizational skills, which are crucial for academic success.

A RAPIDLY CHANGING LANDSCAPE

The integration of AI and assistive technology into educational practices presents a transformative opportunity for students with dyslexia and other language-based learning disabilities. By utilizing personalized learning tools, employing assistive technologies, and adhering to ethical guidelines, educators can create inclusive environments that empower students to succeed. Experts in the field suggest that future advancements in AI could lead to even more sophisticated tools that better understand individual learning styles and provide real-time feedback tailored to specific challenges (Panjwani-Charania & Zhai, 2024).

As AI continues to evolve, its potential to integrate seamlessly with proven, evidence-based instructional methods as well as other educational technologies could enhance collaboration among students and teachers, fostering a more interactive and engaging learning experience. As research continues to develop, ongoing collaboration between educators, technologists, and researchers will be essential in maximizing the potential of these innovations. In this rapidly changing landscape, we are invited to reimagine education, creating environments where all students can thrive and articulate their unique voices with confidence and clarity.

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A CONVERSATION WITH **LORI HOLT** - RESEARCH AND POSSIBLE IMPLICATIONS FOR STUDENTS WITH DYSLEXIA AND DLD

By Jana Cook, Associate Director of Marketing and Communications
and Alexis Pochna, EdM, Director of The Windward Institute





Can you tell us about the focus of your research?

A:

Lori L. Holt is a Professor of Psychology at the University of Texas at Austin and a member of The Windward Institute Advisory Board. She is an expert in auditory cognitive neuroscience, with a focus on understanding how humans interpret the complexity of spoken language. Her research program builds from considering human speech recognition as arising from general, and not uniquely human or speech-specific, mechanisms.

Her research has been supported by the National Institutes of Health, the National Science Foundation, the Binational Science Foundation, the Department of Defense, the Swedish Tercentenary Foundation, the James S. McDonnell Foundation, and other foundations.

Dr. Holt studies the cognitive and neural basis of listening, especially as it relates to speech. She has been particularly interested in the role of learning and attention in shaping how we communicate and listen.

The focus of my research has been on speech communication and how a listener can encounter tiny little fluctuations of air molecules in the air and be able to read the thoughts and intentions of the speaker who made them. In trying to understand this, one can really understand quite a lot about general aspects of human cognition that go beyond language—things like learning and attention—and how it is that we come to align ourselves with our environment.

So, my research has really been directed at trying to understand the complex processes involved in interpreting speech sounds and, in particular, understanding these processes: how we attend to sound in the world, how we learn about sound in the world, and how we process information across time.

We think about a language-based disorder like dyslexia as being something that makes itself known in learning to read. But one of the most consistent markers of dyslexia is having a phonological difficulty, or parsing the bits and pieces of language that are the

most fundamental units. Consider the difference between the spoken words *beach* and *peach*. Differentiating them is not something that we develop in learning to read; it's something that we develop in learning to listen. And so even before our first birthdays, years and years before we will become readers, our brains are beginning to attune themselves to the kinds of patterns of speech that our caregivers are presenting to us. And we can see differences even in the first year of life in how the brain is organizing itself to be efficient and expert in taking in information in our caregiver's language.

Even before our first birthdays, years and years before we will become readers, our brains are beginning to attune themselves to the kinds of patterns of speech that our caregivers are presenting to us.

So, these are the building blocks on which learning to read are built.



What has neuroimaging revealed about the auditory processing mechanisms involved in learning to read?

A:

Some labs have been monitoring brain activity across the auditory system in the context of treating epilepsy.

There's a unique opportunity to understand the auditory system in this way because the areas where electrodes are placed to understand epilepsy tend to correspond and coincide with the auditory system.

And one of the challenges is that other neuroimaging technologies are limited in their time course. Speech processing happens so quickly: As you decide *beach* or *peach*, that's a 10-millisecond difference in the sounds.

It's quite an exciting time, because in tandem, people are beginning to apply these models to think about the way that the brain is processing this information in a manner that can support learning to read.

Knowledge is growing about how the auditory system is connected to the parts of the brain that are also reading focused. They share a foundation that was built for the sounds of English, as one example, that are then connected with the orthography, or the written bits of language. In the landscape of the brain, new regions are connecting and communicating with one another efficiently, and that's the biological result of instruction. Sometimes it works better than other times, and some individuals have an easier time at making these connections.



Can you tell us about procedural learning and its relationship to dyslexia?

A:

A study in which we looked at young adults with dyslexia—academically high-achieving young adults who were all university students and whose standardized test scores at this later stage of development were falling solidly into what would be considered typical—really surprised me.

In my research, we developed novel soundscapes, sounds that no human had ever heard before. We put people in a task in which they were not explicitly instructed about the sounds, and they were not told about the structure of the sounds.

In fact, they were not even told to pay attention to the sounds. And we monitored how they might learn those sounds by inserting those sounds into a video game. Unbeknownst to the participants, the structure of the sounds in this novel soundscape aligned with important actions and events in the game.

And what we found over many studies is that participants, not even knowingly, picked up on the structure of those sounds because that structure helped them to perform a task that they wanted to do well in, like playing the video game. But interestingly, the high-performing college students with dyslexia performed somewhat differently than typically developing young adults in the sense that they were less efficient in learning about the structures of the novel sounds.

Their brains took a somewhat different path to interpret the probabilistic information, the unfamiliar sounds, and relate it to behavior. And we've seen this over and over again with the samples of individuals with dyslexia, both young adults and now children, where this form of incidental learning is less efficient.

So, the idea is that if you have a kind of procedural learning difficulty, you might have challenges picking up organized groups of sounds, or statistical structures, in the world. And that's exactly the process that's needed to learn those sounds of speech, like the difference between *beach* and *peach* in English. And so the hypothesis is that if you, for whatever reason, have some inefficiencies in this system, you might experience a different path of learning these speech-sound representations that are important for your native language.

We're still figuring this out, but one idea is that at least some parts of the challenges of dyslexia might come not from speech or language per se, but from a learning difference that makes it more challenging to lay down the structure that you'll need for speech and language later, and we can see this show up even when speech and language have nothing to do with the task.



Can you give us an example of what would constitute the type of procedural learning that we're talking about?

A:

Some learning that guides our behavior develops memories that are more procedural, like the classic example of learning to ride a bike; it's very difficult to verbalize how to do that or instruct someone how to do it. But it's something that gets laid down in memory.

So if we strip down the video game that we developed for our research to its essence and make it a simple task involving pushing a button, we can show that the procedural learning gained by playing the video game is related to taking a cloud of sounds, where many sounds are inherently different, and linking them to a common action.



How might your research influence the early identification and remediation of dyslexia and other language-based learning disabilities in the future?

A:

By the time reading instruction is introduced, and accounting for the fact that no one has exactly the same developmental trajectory, even among typically developing kids, it can take time to discover that an early reader is struggling.

But if we see young adults with remediated dyslexia who are still showing the fingerprint of differences in

processing efficiency in certain non-language-related learning tasks, that gives us important information. You could take this to its logical conclusion and imagine that those inefficiencies might be revealed within this learner earlier in their development and show whether they might be at risk for developing challenges in learning to read.

And if we develop a fine-grained understanding of this, we might be able to predict and intervene a little bit earlier, maybe offer some specialized support even before children are struggling. That's a long-range hope.

READ

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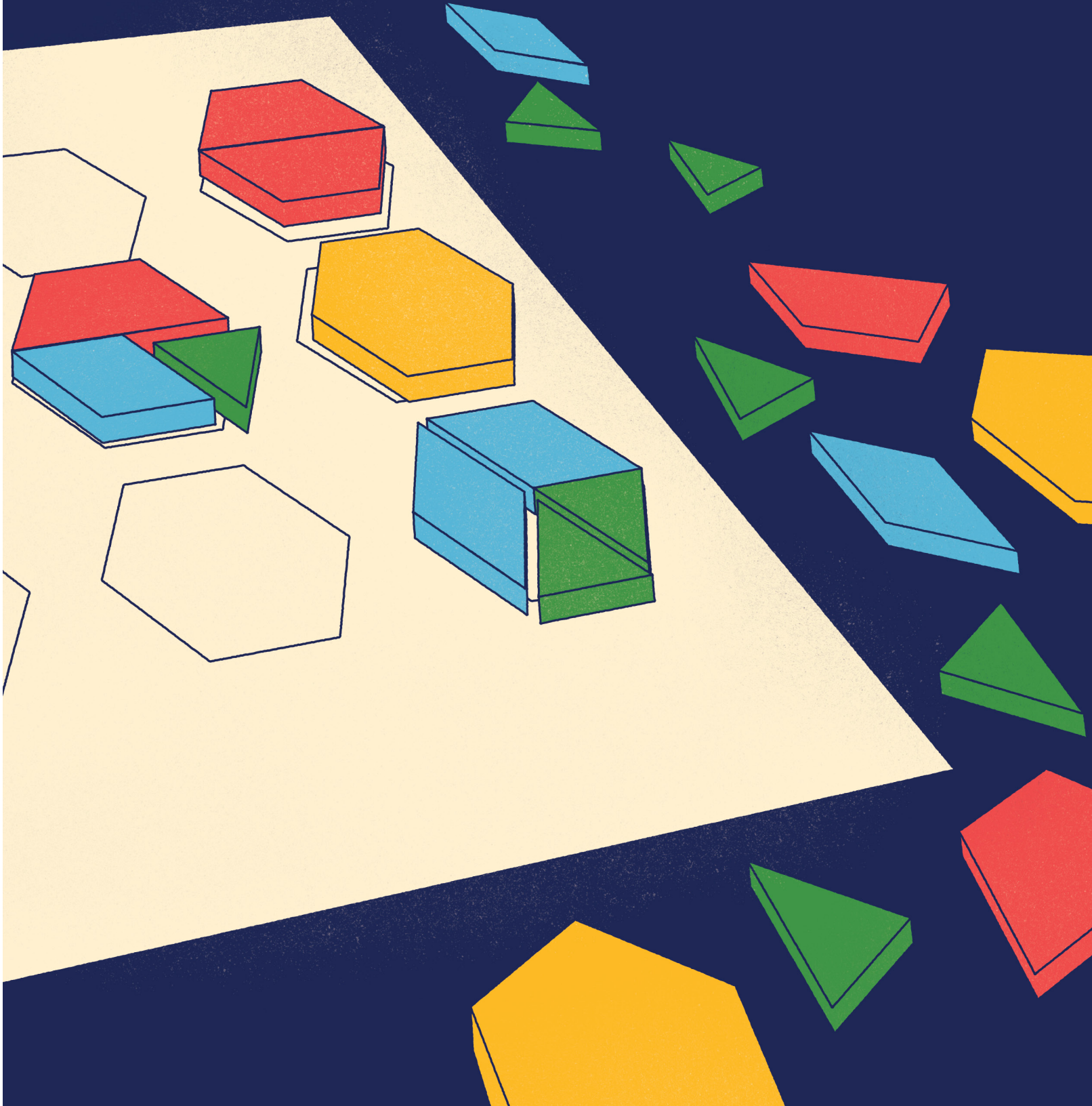
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DECODING DYSLEXIA IN MATH CLASS

By Lisa Murray, MPA, Associate Head of School
for Academic Programs



THE LANGUAGE OF MATH AND COGNITIVE DEMANDS

Dyslexia, a neurobiological condition that affects reading and language processing, is widely recognized for its challenges related to reading and writing. However, its impact on mathematical abilities is often overlooked, even though dyslexia and other language-based learning disabilities can significantly impact mathematical learning and performance. Approximately 40% of children with reading difficulties have difficulties in learning math (Pedemonte et al., 2024). While dyslexia may not directly impair mathematical reasoning, it can influence various skills that are critical for math learning. This article explores the intersection of dyslexia and math, examining how dyslexia and other language processing disabilities can impact mathematical abilities and how educators—and parents—can support students who experience these challenges.

Math is a language in and of itself, with its own unique symbols and specialized vocabulary. One of the main ways dyslexia can impact math learning is through language processing difficulties. For students with dyslexia, understanding and interpreting mathematical language can be as challenging as reading and comprehending written text. Mathematical vocabulary terms like *greater than*, *less than*, and *equal to*—to name just a few—may be confusing, and students might struggle with word problems that require them to extract mathematical information from written text.

In addition to language processing, many students with dyslexia and other language-based learning disabilities present with low working memory,

which plays a crucial role in mathematics (DeSmedt et al., 2009). Moreover, deficits in mathematics are linked to poor working memory (Bull et al., 1999). The National Institutes of Health (NIH) defines working memory as “the small amount of information that can be held in an especially accessible state and used in cognitive tasks” (2014, p. 1). Put simply, working memory involves the ability to hold and manipulate information in one’s mind over short periods. This skill is essential for performing calculations and following multi-step procedures. As noted above, students with dyslexia often have weaker working memory capacities (Gray et al., 2019), making it difficult for them to keep track of numbers, remember steps in a problem, or retain information while solving complex equations.

DID YOU KNOW?

As part of the brain's executive function, working memory temporarily holds and manipulates information.

It is like a **mental whiteboard**.

People can hold only up to about **4 pieces** of information in working memory at a time.

Information held in working memory will be lost in roughly **30 seconds** if it is not reinforced.

Source: Centre for Applied Education Research. (2022).

Working memory challenges can also impact the ability to retrieve math facts automatically. Many students with dyslexia struggle with memorizing and recalling basic math facts, such as multiplication tables or addition and subtraction facts. This is often due to weaker working memory coupled with decreased processing speed. This lack of automaticity with math facts can slow down problem solving and make it more challenging for students to progress to more complex mathematical concepts. The time and effort required to recall these facts can also lead to increased cognitive load, making it harder for students to focus on higher-level problem-solving tasks.

Visual-spatial skills are another area where dyslexia can intersect with math (Helland & Asbjornsen, 2010). Visual-spatial weaknesses can impact the ability to recognize and interpret spatial relationships between objects, which is crucial for geometry, graph interpretation, and understanding mathematical patterns. Students with dyslexia may find it challenging to visualize shapes, understand symmetry, or comprehend spatial transformations. These difficulties can lead to student frustration and a lack of confidence in mathematical abilities.

IMPLICATIONS FOR TEACHING

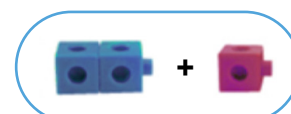
Use Multiple Representations

To support students with dyslexia in math, educators need to adopt strategies that address the specific challenges outlined above. One effective approach is to provide multisensory instruction, which engages multiple senses to reinforce learning. For example, using manipulatives, visual aids, and hands-on activities help students to understand abstract mathematical concepts more concretely. By incorporating tactile and kinesthetic experiences, educators can make math more accessible and engaging for students with dyslexia and other language-based learning disabilities.

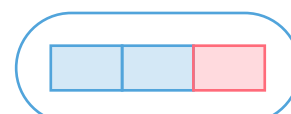
The concrete, representation/pictorial, abstract (CRA or CPA) approach to teaching mathematical concepts is an effective methodology that bridges students' integration of more efficient algorithms as they build their conceptual knowledge throughout their mathematical development, from the earliest grades all the way up through secondary school and beyond (Powell et al., 2024).

Be Systematic and Explicit

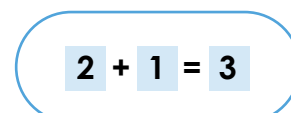
Explicit and systematic instruction is another key strategy for supporting students with dyslexia in math. Educators should provide clear, step-by-step



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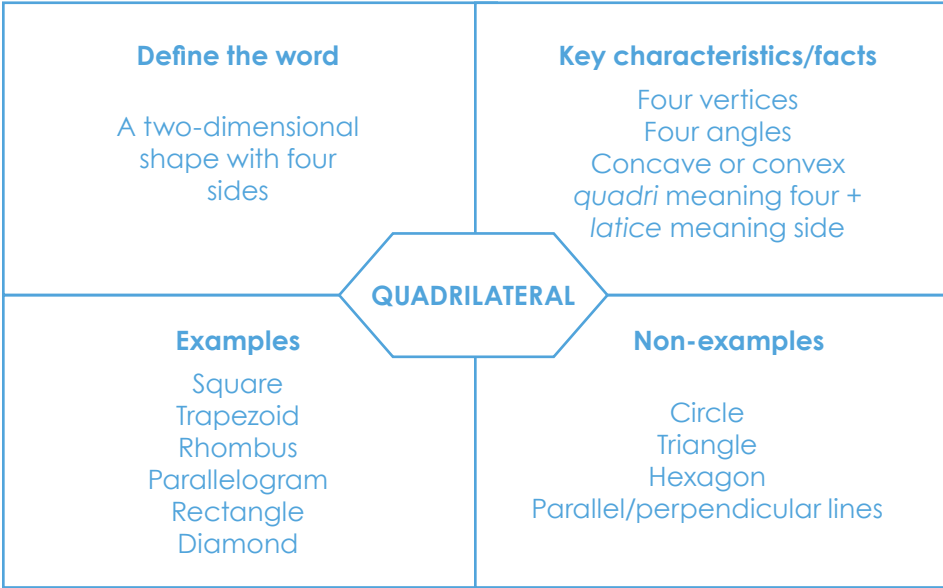
REPRESENTATIONAL



ABSTRACT

explanations of mathematical concepts and procedures, breaking them down into manageable parts. Repetition and practice are essential to reinforce learning and build automaticity. Additionally, using graphic organizers, visual models, and diagrams can help students organize information and understand the relationships between different mathematical elements. Systematic instruction requires that teachers have a deep knowledge of the progression of skills needed for math learning. These math skill progressions emphasize the importance of building foundational skills over time and that acquisition of foundational math skills is necessary for students to understand more complex mathematical concepts.

SAMPLE ACTIVITY FROM THE WINDWARD SCHOOL



PICTURE

QUADRILATERAL	SHAPE
Rectangle	
Parallelogram	
Diamond	
Rhombus	

Source: The Windward School. Based on Frayer Model (1969)

Technology can also play a vital role in supporting students. Tools such as text-to-speech software, speech-to-text applications, and digital math manipulatives can provide alternative ways for students with dyslexia to access and express mathematical ideas. These technologies can help bridge the gap

between language and math, enabling students to focus on understanding concepts rather than struggling with language-related challenges.

For a deeper dive into how technology can assist students with language-based learning disabilities, see “Leveraging Technology to Empower Students with Dyslexia” on page 49 of this issue.

Focus on the Language of Mathematics and Its Real-World Application

Creating a supportive and inclusive classroom environment that focuses on the language of mathematics is crucial for students with dyslexia. Educators should encourage students to view challenges as opportunities for learning and growth. Explicit instruction of mathematics-specific vocabulary, emphasizing multiple-meaning math-specific terminology—using visuals and hands-on experiences—is essential. Providing positive reinforcement, celebrating successes, and prioritizing effort can boost students’ confidence and motivation. Additionally, allowing students to work at their own pace and providing opportunities for peer collaboration can create a sense of community and support within the classroom. Research indicates that math students should have multiple and varied opportunities to respond and engage in discourse in the math classroom (Powell et al., 2024). Students benefit from having to verbalize their own mathematical thinking. This also provides opportunities for teachers to monitor students’ understanding of mathematical concepts.

Focused instruction on word problems that are directly related to students' real-world experiences makes mathematical thinking more relevant and, thus, more engaging. Solving real-world word problems requires multiple skills, including reading, understanding (both vocabulary and content), formulating a solution plan, identifying relevant information (and filtering out irrelevant information), performing the arithmetic, and checking for reasonableness. All these skills require a great deal of flexibility in thinking as students work to solve real-world mathematical problems.

It is important to note that linking mathematical operations (addition, subtraction, multiplication, division, etc.) to key words in word problems discourages mathematical reasoning. Instead, teachers should emphasize using an attack strategy and teach students to identify the schema of a word problem. An attack strategy is a series of steps that students use to guide their approach to solving word problems. Schemas are the underlying structures of math word problems. Six word-problem schemas are typically seen in word problems in elementary math curriculum and these six schemas fall into two distinct categories:

additive (total, difference, change) and multiplicative (equal groups, comparison, combinations). Teachers should provide explicit instruction on each of these schemas and ample practice over time with all six types of schemas.

BUILD FACT AND COMPUTATIONAL FLUENCY

Fluency refers to doing math efficiently and accurately. Fact and computational fluency are not simply memorization tasks; mathematical fluency is built on a foundation of number sense, conceptual understanding, strategic and logical reasoning, and problem solving. Fluency frees up working memory to perform more complex, multi-step mathematical tasks. Many students with language-based learning disabilities, as noted earlier, have working memory challenges and will therefore likely need additional practice opportunities to develop the same level of mathematics proficiency as learners without working memory challenges.

Fluency development should be supported in the classroom by promoting the efficient use of strategies (e.g., counting on, compensation, building on known facts, etc.) and charting student progress. Explicitly teaching

and promoting the efficient use of strategies, coupled with student charting of their own progress (including self-imposed goals over time) can be very motivating for students. Other research-validated approaches to building math fluency include incremental rehearsal (introducing facts in groupings based on known facts to unknown facts) and the “cover, copy, compare” approach, in which students look at a solved math fact, cover it, copy the problem and solve it, and then compare their work to the original problem (Cozad & Riccomini, 2016).

Supporting the development of fact and computational fluency requires both explicit instruction and consistent student practice over time. Practice with peers, connecting math fluency to mathematics in the home and real world, as well as fluency practice with technology and games, have also shown to be effective in building mathematical fluency for students.

Although individuals with dyslexia face unique challenges that can impact mathematical learning, they also frequently possess strengths in areas such as problem solving, critical thinking, logical reasoning, and creativity. By tapping into these strengths and providing appropriately scaffolded support, teachers and parents/guardians can help students with dyslexia develop a positive relationship with math.

Parents and guardians also play a crucial role in supporting their child’s math learning journey. Engaging in open communication with teachers and specialists, advocating for appropriate accommodations, and providing a supportive home environment can make a significant difference in a student’s mathematical success. Families can participate in math-related activities at home, such as playing math games, cooking, and measuring, which all reinforce math skills in real-life contexts.

By working collaboratively and proactively, educators, parents, and guardians can create a learning environment where students with dyslexia and other language-based learning disabilities can thrive and develop the mathematical skills they need for success in school and beyond. With the right support, students will develop confidence in their mathematical abilities and discover the joy and beauty of mathematics.

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THE LANGUAGE OF EMOTION: ENHANCING EDUCATION THROUGH SEL

By Anna Weiser, PsyD, Director of Student Support
and Social-Emotional Learning and
Jonathan Rosenshine, MEd,
Associate Head of School



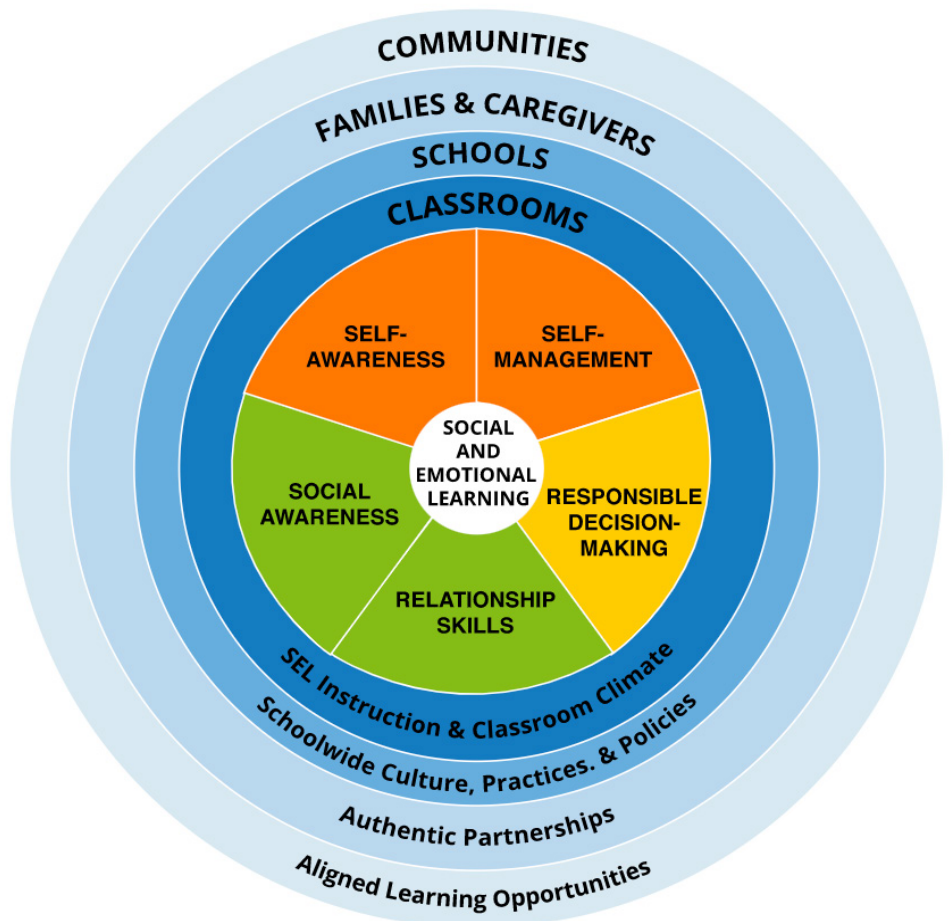
As leaders in a specialized school for children with language-based learning disabilities (LBLDs), we see the transformative power of social and emotional learning (SEL) daily. All students face challenges that extend far beyond reading and writing, and for students grappling with the comorbidities and complexities that so often pair with dyslexia and other LBLDs (Margari, 2013), we have to be ever mindful and proactive in our support of their growth. Persistent struggles with language and learning can lead to feelings of frustration, inadequacy, and low self-esteem. If we fail to supply adequate support for our students, these emotional and psychological burdens can hinder a child's overall development and academic progress.

Understanding and addressing the psychological and emotional needs of students with learning disabilities through SEL is not just beneficial; it's essential. SEL is the process through which individuals acquire and apply the skills necessary to understand and manage emotions, establish positive relationships, and make responsible

decisions. It encompasses five core competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (CASEL, n.d.). By

formulating a schoolwide approach to SEL, educators can create a supportive learning environment that enhances students' social, emotional, and academic outcomes (Greenberg, 2023).

The CASEL Guide to Evidence-Based Social and Emotional Learning (SEL) Programs is a valuable interactive online resource for any school committed to adopting and implementing a comprehensive SEL program.



Source: ©2021 CASEL. All Rights Reserved.

<https://casel.org/fundamentals-of-sel/what-is-the-casel-framework/>

Consider the story of Vivian, a bright and curious fifth grader who has dyslexia. Despite her superior intelligence and eagerness to learn, Vivian often feels overwhelmed and discouraged by the challenges she must tackle with reading and writing. Her frustration is compounded by attention-deficit/hyperactivity disorder (ADHD), which makes it hard for her to focus and stay organized. Without proper support, students like Vivian are at a higher risk of developing adverse outcomes such as anxiety, depression, school avoidance, and social challenges (Mugnaini et al., 2009; Hendren et al., 2018). The constant struggle to navigate the social landscape, coupled with feelings of inadequacy and low self-esteem, can take a severe toll on students' emotional well-being. And yet, even for students with dyslexia who are fortunate enough to attend a specialized school like Windward, with a research-based academic program and a highly trained faculty, the mental health crisis among youth in our country remains widespread and alarming. Based on the Youth Risk Behavior Surveillance Data Summary & Trends Report, data from 2021 showed that

- 42% of students felt persistently sad or hopeless;
- nearly one third (29%) experienced poor mental health;
- 22% of students seriously considered attempting suicide; and
- 1 in 10 attempted suicide.

(Centers for Disease Control and Prevention, 2022)

We also know that for children with LBLDs, the risk is even higher, and by doubling down on SEL, we can more directly address these risks and promote resilience and well-being as well as academic success for our students.

THE CONNECTION BETWEEN SEL AND ACADEMIC PROGRESS

The neuroscience of learning and emotion underscores the importance of a supportive emotional environment for effective learning. Research indicates that the brain's capacities for learning, decision-making, and relationship building are deeply intertwined with its emotional state: for example, sense of safety, belonging, and connectedness (Martin & Ochsner, 2016). On the other hand, chronic stress and anxiety can impair cognitive functions such as attention, memory, and problem solving (Almarzouki, 2024). Therefore, creating a supportive and emotionally safe environment is essential for maximizing students' academic potential as well as their health and social well-being.

IT BEGINS WITH BELONGING

When students feel secure and connected to their learning environment, the brain is more receptive to new information and experiences, facilitating more effective cognitive processing. A sense of belonging is fundamental to effective learning and personal development. When students feel they belong, everything else improves—from their engagement in academics to their overall sense of safety and well-being. Diversity, equity, inclusion, and belonging (DEIB) initiatives are centered on this idea of belonging, emphasizing the importance

When students feel they belong, everything else improves—from their engagement in academics to their overall sense of safety and well-being.

of creating inclusive environments where every student feels valued. One of the fundamental questions we ask ourselves is this: How do we encourage growth in our students that leads to these desired outcomes of felt value and belonging?

CULTIVATING OUR EMOTIONAL INTELLIGENCE

One such answer is a focus on SEL, and more specifically on growing and supporting the emotional intelligence of our community. Equipping students with tools to grow their emotional intelligence—defined as the ability to recognize, understand, manage, and utilize emotions effectively—is essential for creating a strong sense of belonging, academic learning, and psychosocial growth (Brackett, 2019). It is beholden upon us to teach our students how to identify their feelings, manage their stress, regulate their emotions, stay focused, and navigate social interactions. The great news is that there are evidence-based, data-driven methods that we can use to grow emotional intelligence in our students (as well as in ourselves).

The benefits of SEL extend to all students, not simply those with LBLDs. Just as the science of reading emphasizes evidence-based literacy instruction for all, the science of SEL advocates for universal practices grounded in the interplay between emotion and attention (Cavioni, Grazzani, & Ornaghi, 2017). These practices include creating a positive school climate, fostering strong teacher-student relationships, and providing opportunities for students to practice SEL skills in real-world contexts. We owe this work to all children in all schools.

The science of SEL advocates for universal practices grounded in the interplay between emotion and attention.

We are fortunate at The Windward School to be embarking on the journey of implementing the RULER Approach as our schoolwide SEL program. Developed by the Yale Center for Emotional Intelligence, RULER is a systematic method for teaching

emotional intelligence in schools.

It focuses on five key skills around emotions:

Recognizing

Understanding

Labeling

Expressing

Regulating

Based on the scientific understanding that emotions drive learning, decision-making, and well-being, RULER will help to ensure that we are not only meeting the School's mission of remediating our students' LBLDs but also preparing our students to thrive in all aspects of their lives. Schools and districts have a wide range of options when selecting among SEL programs. To maximize learning outcomes, it is important for schools to select a program that is supported by research; to enact a systematic, multi-year implementation process; and to emphasize robust professional development, curriculum integration, and family engagement.

ACADEMICS SUPPORT SEL IMAGINING OUR FUTURE

The relationship between SEL and academics is bidirectional. We know the power in the capacity of an academic curriculum to significantly support SEL by incorporating materials that feature rich and accessible emotional vocabulary and stories. By reading books that explore diverse emotional experiences, students can develop greater empathy and understanding (Wolf, 2007). Studies have shown that when children learn the language to express their feelings, they gain better emotional control and increased prosocial skills (Torre & Lieberman, 2018). This is especially important for students with LBLDs, who are at a higher risk of emotional challenges. Language acquisition isn't just about acing vocabulary quizzes or enhancing reading comprehension; it equips students with the tools they need to understand and articulate their emotions, fostering a sense of confidence and self-awareness. The academic program provides the very building blocks that allow students to engage deeply in their SEL work.

All students benefit from SEL, and those with LBLDs face increased vulnerabilities that make a structured, intentional approach to SEL even more essential for these learners. The nexus between SEL and academics is not about labeling students with dyslexia as exceptional in need; it is about recognizing how SEL tightens the connection between emotional intelligence and academic success. By focusing on SEL, we empower students to navigate their emotions, enhance their social skills, and build resilience; in this, we are laying a foundation for both academic achievement and personal growth. Such a comprehensive approach ensures that every child, regardless of their learning profile, is equipped with the tools they need to succeed in school and life.

READ

Brackett, M. (2019). *Permission to feel: Unlocking the power of emotions to help our kids, ourselves, and our society thrive*. Celadon.

Feldman, L. (2018). *How emotions are made: The secret life of the brain*. Mariner Books.

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LISTEN

Huberman, A. (Host). (2024, September 9). *Dr. Marc Brackett: How to Increase Your Emotional Intelligence* [Audio podcast episode]. The Huberman Lab Podcast.

Scorrano, D. (Host). (2021). *The Neuroscience of Resilience and Dyslexia with Fumiko Hoeft, PhD* (No. 23) [Audio podcast episode]. In READ Podcast. The Windward Institute.



Use this QR code to explore READ, WATCH, LISTEN resources.

WATCH

(2015, June 9). *Inside Out* [Film]. Walt Disney Studios Motion Pictures.

(2024, June 14). *Inside Out 2* [Film]. Walt Disney Studios Motion Pictures

Collaborative for Academic, Social, and Emotional Learning (CASEL). (N.D). What Is the CASEL Framework?

WHAT THE INSTITUTE IS READING NOW



LEARNING DISABILITIES

From Identification to Intervention

SECOND EDITION

Jack M. Fletcher, G. Reid Lyon,
Lynn S. Fuchs, and Marcia A. Barnes

Fletcher, J., Reid Lyon, G., Fuchs, S., &
Barnes, M. (2018). *Learning Disabilities,
From Identification to Intervention*.
Guilford Press.

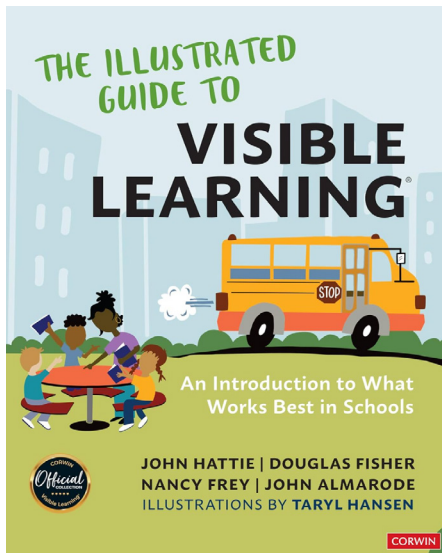
Amy E. Margolis
Jessica Broitman *Editors*

Learning Disorders Across the Lifespan

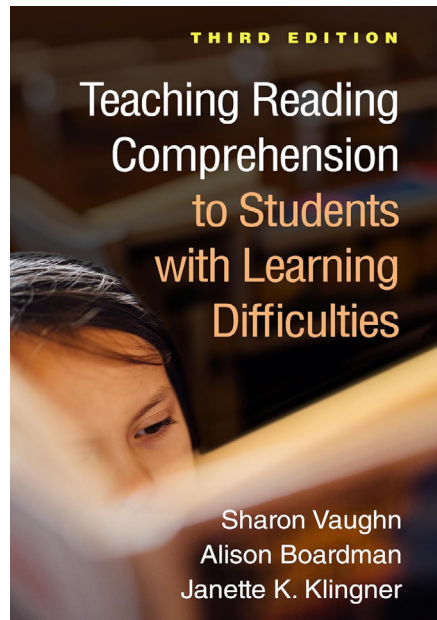
A Mental Health Framework

 Springer

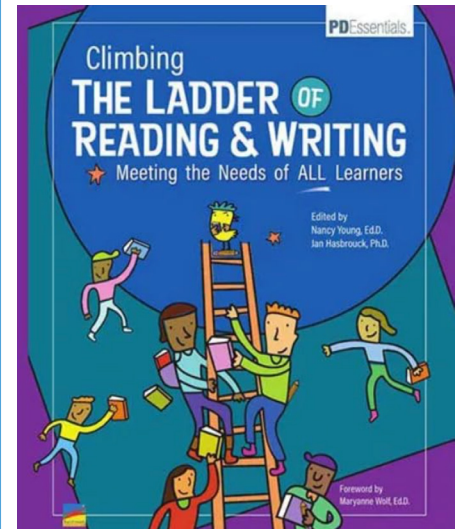
Margolis, A. & Broitman, J. (Eds.) (2023).
*Learning Disorders Across the Lifespan:
A Mental Health Framework*.
Springer Cham.



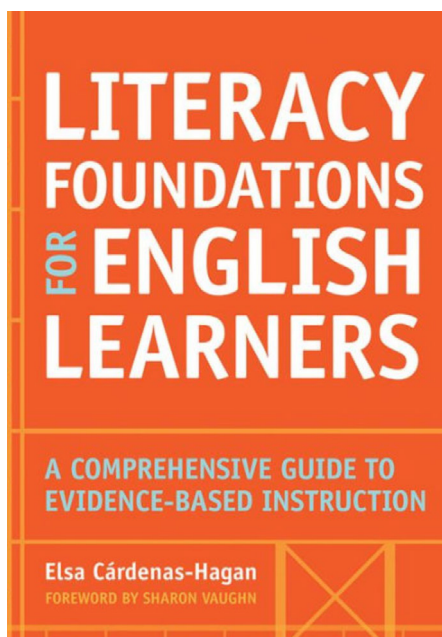
Hattie, J., Fisher, D., Frey, N., & Almarode, J. (2024). *The Illustrated Guide to Visible Learning: An Introduction to What Works Best in Schools*. Corwin.



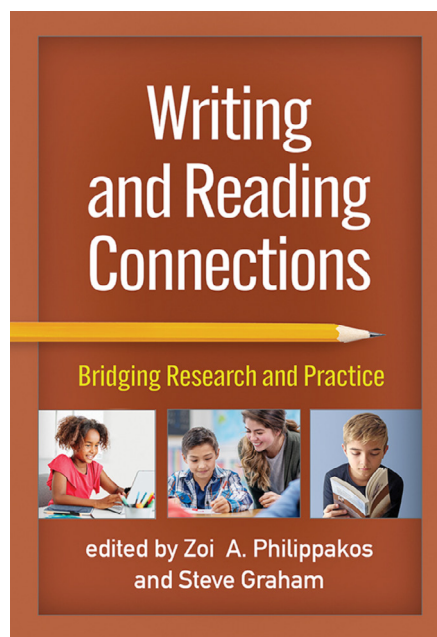
Vaughn, S., Boardman, A., & Klingner, J. (2024). *Teaching Reading Comprehension to Students with Learning Difficulties*. Guilford Press.



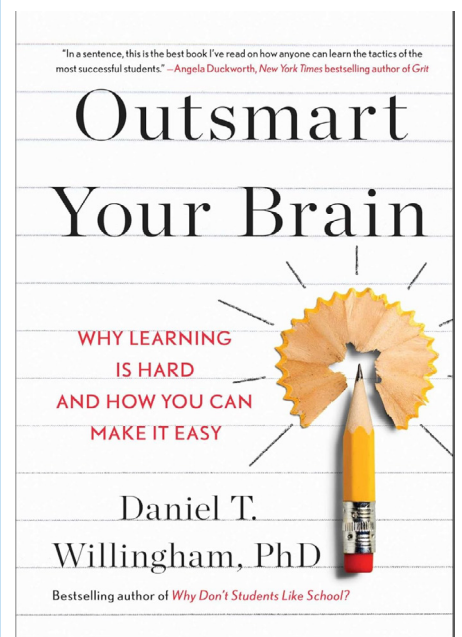
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Willingham, D. (2023). *Outsmart Your Brain: Why Learning is Hard and How to Make it Easy*. Gallery Books.

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CATCH THEM BEFORE THEY FALL: EARLY IDENTIFICATION OF DYSLLEXIA

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