Evidence-Based Reading Instruction and Educational Equity

2023 Children's Mental Health Report

Child Mind Institute

The Child Mind Institute is dedicated to transforming the lives of children and families struggling with mental health and learning disorders by giving them the help they need to thrive. We've become the leading independent nonprofit in children's mental health by providing gold-standard, evidence-based care, delivering educational resources to millions of families each year, training educators in underserved communities, and developing tomorrow's breakthrough treatments. Together, we truly can transform children's lives.

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ABOUT THE CHILD MIND INSTITUTE CHILDREN'S MENTAL HEALTH REPORT

Every fall, the Child Mind Institute releases a new Children's Mental Health Report with thought-provoking and practical information on child and adolescent mental health care, based on reliable studies and emerging research.

Our goal in preparing the report is to deepen our understanding of problems, promote effective solutions, and, most importantly, spark conversations — around kitchen tables and in the halls of Congress. Though the theme varies from year to year, every report reinforces one key message: mental health and learning disorders are serious, but early intervention can make all the difference in transforming children's lives.

Introduction

The State of Literacy Among U.S. Children

Reading is a fundamental skill underlying academic achievement, professional success, financial security, mental health, access to health care, and full participation in society. But right now, staggering numbers of children in the United States are not learning to read fluently.

According to data from the 2022 reading assessment of the National Assessment of Educational Progress (NAEP) from the U.S. Department of Education, only 33 percent of fourth-grade students in the U.S. are proficient readers, with similar rates across all geographic regions of the country.[1] And only 63 percent demonstrated even basic reading skills.[2] These rates, while impacted by the COVID-19 pandemic, are not solely a product of it. In 2019, the same assessment found that only 35 percent of fourth graders were proficient readers.[3]

The NAEP report also indicates that rates of reading proficiency are even lower among fourth graders from communities of color. Seventeen percent of Black students, 18 percent of American Indian/Alaska Native students, and 21 percent of Hispanic students demonstrated proficiency in reading, compared to 42 percent of white students.[4]

Children from low-income families (as defined by eligibility for free or reduced-price school lunches) also had lower levels of proficiency (19 percent proficient, compared to 46 percent of students not eligible), as did students with disabilities (11 percent) and students learning English (10 percent).[5]

Recent data also make it clear that while adult literacy rates are somewhat higher, difficulties with reading do not necessarily go away as children grow up. In 2017, 23 percent of adults in the United States were found to have low English literacy skills — about 48 million adults.[6]

The impact of the pandemic

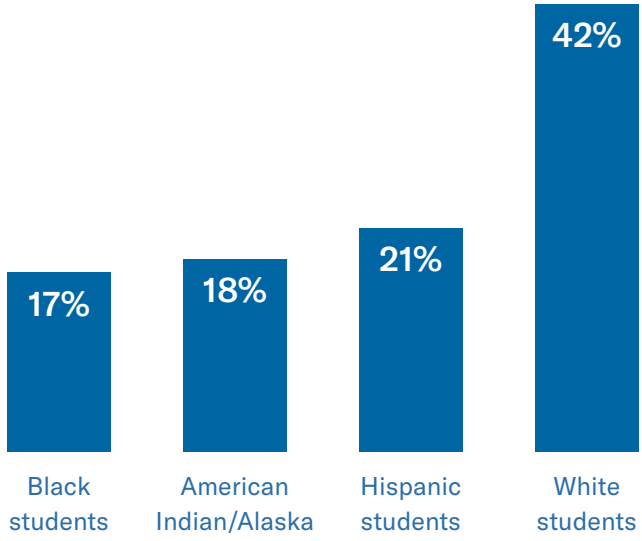
Although the full effects of the COVID-19 pandemic on children's learning have yet to be seen, the available data already indicate that reading achievement has suffered. A special 2022 administration of the NAEP's long-term trend assessment for 9-year-old students found that students' average reading scores were five points lower than in 2020. This was the largest average score decline since 1990.[7]

Overall, scores of lower-performing students declined more than those of higher-performing students, indicating that the pandemic's impact on learning had a disproportionate effect on kids who were already struggling academically.[8]

The report also suggests that the effects of remote learning played out differently depending on the resources available to children, again demonstrating how academic losses disproportionally hit those who were already at a disadvantage. Seventy percent of the 9-year-olds surveyed reported having remote schooling during the 2020–21 school year. Of that 70 percent, the higher performers reported greater access to resources like computers and tablets, quiet spaces to work, and consistent support from teachers.[9]

Only 33 percent of fourth grade students in the U.S. are proficient readers. Among students from communities of color, rates of reading proficiency are even lower.

Percentage of fourth grade students who are proficient readers



An unmet need

These statistics make it clear that, especially in the wake of the pandemic, reading instruction in the United States is not currently meeting our children's needs. It's also clear that the greatest impacts of inadequate reading support are felt by the children, families, and communities that are already the most vulnerable.

Despite the obvious need for increased access to more effective reading instruction, there is not currently a coordinated national response to this crisis. Laws governing the reading curricula that school districts use are left up to states. States can mandate certain curricula, ban certain curricula, or do neither. Rules vary enormously among states and are changing rapidly.[10]

The same is true for policies around screenings for dyslexia, a common learning disorder that affects reading ability. The International Dyslexia Association estimates that 15–20 percent of people have at least some symptoms of dyslexia.[11] When they're identified early and given proper support, children with dyslexia can learn to read successfully, but dyslexia screenings vary widely by state. Several states have no policy in place for dyslexia screening, and some that do require screening lack policy on what kinds of interventions should occur after screening.[12]

Despite this lack of coherent response to an urgently pressing problem, there is a great deal we do know about how to remedy it. This report will cover the following topics in an effort to convey both the crucial stakes of our nation's reading crisis and the practical steps that educators, policymakers, and families can take to solve it:

- **Why Reading Skills Matter:** What we know about the mental health impacts of difficulty with reading, as well as long-term consequences of illiteracy for both individuals and society at large
- **The Neuroscience of Reading and Dyslexia:** The latest brain-based research on how children learn to read, and how the brains of children with dyslexia are different
- **Evidence-Based Reading Instruction:** What the evidence tells us about the most effective ways to teach children to read
- **Moving Toward the Science of Reading:** How we can work together to increase access to effective reading instruction and help the next generation of American children grow into skilled, confident readers

Chapter One

Why Reading Skills Matter

It's obvious that being able to read well is an essential component of academic and professional success, but reading ability affects outcomes far beyond school and the workplace, both at the individual level and for society as a whole.

This chapter examines the research on just a few of the key ways that literacy — or lack thereof — can shape the lives of individuals and communities.

Mental health and reading ability

Dyslexia is a common learning disorder that affects children's ability to learn to read. While it's important to note that not all children who struggle with reading have dyslexia, much of the existing research on mental health and reading ability focuses on kids with dyslexia. The defining symptoms of dyslexia have to do with academic skills, but the disorder is also known to be correlated with a wide range of emotional, social, and behavioral challenges.

The available literature indicates that children with dyslexia are more likely to experience both external symptoms of mental health challenges (like disruptive behavior) and internal ones, like anxiety and sadness.[13] They are also vulnerable to stigma and negative stereotypes associated with learning disorders, and they often struggle with low self-esteem and feeling that they are unintelligent.[14] And teenagers with learning disorders (including dyslexia) have been found to experience general emotional distress at twice the rate of kids without learning disorders.[15]

What's more, the risk of diagnosable mental health disorders is higher for children with dyslexia than it is in the general population. Rates of ADHD, anxiety disorders, and depressive disorders are all elevated for kids with reading disabilities.[16]

There is not yet scientific consensus about the causes of such correlations, and it's possible that they could be due to underlying biological or environmental factors that cause both disorders. However, there is also evidence that difficulty with reading may directly cause mental health challenges, especially anxiety. For instance, children who struggle in school may grow anxious about attending and about their self-worth in general.[17]

The research also makes it clear that mental health challenges related to reading ability are not limited to kids with dyslexia diagnoses. For example, adolescents with poor reading skills (including those with no learning disorder diagnosis) have been found to be more likely than their peers to experience anxiety disorders, especially social anxiety and generalized anxiety disorder.[18]

Difficulty with reading is also correlated with higher rates of social challenges. A large longitudinal study of elementary school children found that students who struggled with reading in third grade were about twice as likely as their peers to consider themselves "angry, distractible, sad, lonely, and unpopular" by the time they reached fifth grade.[19]

The available literature indicates that children with dyslexia are more likely to experience both external symptoms of mental health challenges (like disruptive behavior) and internal ones, like anxiety and sadness.

And there's evidence that bullying increases along with reading struggles: one nationally representative study found that over a third of students experiencing reading difficulties were involved in bullying (either as the victim, the bully, or both) compared with about a fifth of students without reading difficulties.[20] These differences held true even after controlling for factors like gender, level of schooling, and self-esteem.

Supporting the mental health of kids with reading challenges

If your child is having a hard time learning to read, they may be struggling with their self-esteem, too. Here are a few steps you can take to build up their confidence and support their mental health:

- **Help kids understand their learning difficulties.** It's important for kids to know that struggling with an academic skill doesn't mean they aren't smart. If your child is diagnosed with dyslexia, talk with them about what that diagnosis means and how it can help them get the support they need to excel.
- **Be sensitive to kids' embarrassment.** The last thing most kids want is to look different from their classmates. Make a plan with your child's teachers to minimize situations that might embarrass them, like being called on to read aloud unexpectedly or being pulled away for tutoring in front of the whole class.
- **Praise effort, not outcome.** Kids who struggle in school often get the sense that if they're not succeeding, they're not valuable. You can help by showing them that their hard work and effort matter as much as their achievements. Try saying things like: "I saw how hard you worked to get through that assignment and I'm so proud of you for sticking with it," rather than praising good grades or high test scores.
- **Build on their strengths.** Children benefit from having a holistic understanding of their strengths and weaknesses. Help them see where they excel — "I noticed that you remember information really well when you hear it aloud" — and work with them and their teachers to develop those skills further and use them to address challenges strategically.
- **Set kids up for success.** Spending time on an activity that they enjoy can help kids feel good about themselves and what they're able to accomplish. Sports, art, theater, music, volunteering — anything that your child is interested in can be a great way to build up their self-esteem.
- **Give kids language to talk about their challenges.** Especially if your child has a diagnosed learning disability, learning to name the challenge and how it affects them can make it much easier to navigate school as they get older. Help kids practice what they might say to teachers and even peers about how they learn and what they need to succeed.
- **Provide positive role models:** Talk to kids about the many leaders and visionaries with dyslexia who have excelled in their fields, like Whoopi Goldberg, Steven Spielberg, Magic Johnson, Octavia Spencer, John Lennon, and many more. Knowing that people they admire have overcome similar challenges and developed their own unique strengths can inspire kids to do the same.
- **Get professional mental health support if necessary.** If your child is showing consistent signs of anxiety or depression, acting out, or refusing to go to school, a mental health professional (including your child's school counselor) can recommend appropriate assessment and treatment options.

Students who struggled with reading in third grade were about twice as likely as their peers to consider themselves "angry, distractible, sad, lonely, and unpopular" by the time they reached fifth grade.

The available evidence suggests that the mental health challenges associated with reading difficulty do not necessarily diminish as kids get older — in fact, some studies show that poor reading skills are associated with increasingly negative mental health and behavioral outcomes during the teenage years. Adolescents who cannot read well are more likely than their peers to drop out of high school, consider suicide, and even attempt suicide, and researchers report that this trend remains true after controlling for other psychiatric factors and demographics.[21]

What's more, research on health literacy in general shows that people who can't read well also struggle to access adequate care in a wide range of medical contexts,[22] suggesting that young people with reading difficulties may be at an additional disadvantage when it comes to getting support for their mental health challenges.

More research is needed to fully understand the relationships between reading struggles and mental health challenges, but the data so far indicate strongly that poor reading skills have the potential to make life harder and more painful for kids in many areas of their lives and across their lifetimes.

The societal costs of reading difficulties

Beyond mental health impacts, poor reading skills are also connected to a wide range of negative material outcomes for individuals and their communities.

Reading struggles at a young age often affect later levels of academic achievement. One report finds that about 16 percent of students who aren't reading proficiently by the end of third grade don't graduate from high school on time. This rate is four times greater than students who read proficiently by the end of third grade.[23]

These academic outcomes can in turn affect professional trajectories and earning potential. All of the following have been found to be correlated with illiteracy in adults:

- Higher unemployment
- Lower income
- Lower-quality jobs
- Greater risk of medical issues[24]

Low literacy skills are also associated with incarceration. A 2014 study from the National Center for Education Statistics reported that 29 percent of incarcerated adults read at a level below proficient, compared to 19 percent of adults in the general population.[25]

These worsened outcomes are connected to broader, society-wide costs as well. Less literacy across a population means lower overall earnings, less economic productivity, and increased costs for health care and social services:

- One analysis estimates that illiteracy costs the global economy over 1 trillion dollars every year.[26]
- Another posits that if all American adults could read at a sixth-grade reading level, the annual income of the U.S. would increase by $2.2 trillion (10 percent of the GDP).[27]

At the broadest level, the evidence shows that in the United States (and in many other countries) literacy is positively correlated with several noneconomic measures of sociopolitical connectedness and civic engagement. Higher proficiency in literacy is tied to greater political efficacy, participation in volunteer activities, and overall trust in others.[28]

In short, poor reading skills aren't just a problem for the individual — they're a strain on the economic development and social fabric of our democracy as a whole.

About 16 percent of students who aren't reading proficiently by the end of third grade don't graduate from high school on time. This rate is four times greater than students who read proficiently by the end of third grade.

Deepening inequities

Learning disorders like dyslexia occur at similar rates across ethnicities and socioeconomic groups.[29] However, it's crucial to note that at both the individual and societal levels, the many costs of low literacy fall more heavily on low-income communities and communities of color. We know that childhood reading proficiency is already lower for these groups,[30] despite comparable rates of dyslexia, and that they are less likely to have the educational opportunities, economic resources, and access to social services that might help them build proficiency during their school years or later in life.

Recent research highlights the deep connection between individual literacy skills and personal income: adults who read at the equivalent of a sixth-grade reading level earn $63,000 per year, on average. In contrast, adults with the lowest levels of literacy earn an average of $34,000 annually.[31]

The relationship between family income and academic achievement is also well documented, with high family income in childhood increasing the odds of academic success, which in turn increases the odds of high earnings in adulthood. As one researcher puts it: "The combination of these trends creates a feedback mechanism that may decrease intergenerational mobility. As the children of the rich do better in school, and those who do better in school are more likely to become rich, we risk producing an even more unequal and economically polarized society."[32]

Indeed, the available evidence indicates that children from low-income families are the ones who are most likely to experience lower academic achievement related to poor reading skills. And those disadvantages compound for children of color who are also from low-income families. A review of the research on the intersection of poverty, race, and reading ability reports the following:

"About 31 percent of poor African American students and 33 percent of poor Hispanic students who did not hit the third-grade proficiency mark failed to graduate [from high school on time]. These rates are greater than those for white students with poor reading skills. But the racial and ethnic graduation gaps disappear when students master reading by the end of third grade and are not living in poverty."[33]

Research also indicates that African American and Hispanic children who show signs of dyslexia are less likely than white children to be identified as dyslexic through school screening programs, even after controlling for income level,[34] which means that they are less likely to get the early intervention that they need.

In other words, poor reading skills seem to intensify the already significant challenges that children from disadvantaged communities face when it comes to achieving academic success and the security it can provide.

The data make it clear that providing equal access to effective reading instruction at a young age is an essential part of reducing racial and economic inequity in America, decreasing rates of mental health challenges, and ensuring that all our children have the chance to thrive. The rest of this report will focus on the evidence for how best to achieve that critical goal.

Chapter Two

The Neuroscience of Reading and Dyslexia

Thanks to advances in cognitive neuroscience research over the past several decades, we now have hard neuroscientific data about what's happening in kids' brains when they learn to read. We know that learning to read requires the coordinated work of several brain regions that correspond with different cognitive skills.

We also know that the brains of children with dyslexia differ from those of typically developing readers — and that effective instruction can change the brain areas and systems that kids with dyslexia use to read.

How children learn to read

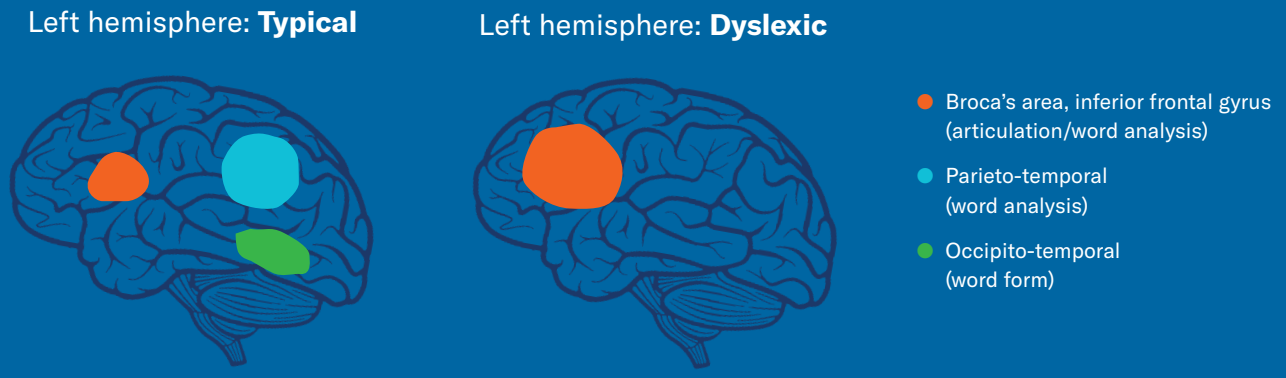
Unlike speaking, reading is not a skill that the brain is hardwired to develop. There is no single reading center in the brain — instead, it involves several different areas of the brain working together to develop the neuronal circuitry required for skilled, fluent reading.[35]

Some children can learn to read with relatively little effort, but most — including kids with dyslexia — need explicit, systematic reading instruction to build the necessary pathways in their brains and become strong readers.

When kids are first learning to read, they have to make a concerted effort to recognize printed letters and connect them with specific sounds, a process known as phonics. Kids also have to practice articulating those sounds aloud. This process of sounding out words letter by letter — rather than automatically recognizing them as more skilled readers do — requires a lot of active concentration (even for kids who pick up reading easily) and relies on the left parieto-temporal region of the brain,[36] which serves as the "decoding center" of the reading brain.

As children's reading skills get stronger, the process of extracting letters, linking them to their sounds, and then blending them into whole words becomes more fluid and automatic. They also begin to "code" words in another region of the brain lower down that is used to recognize familiar visual patterns of words. This region, located in the left fusiform gyrus, is sometimes referred to as the "visual word form area." As children become better readers, they rely more on the lower pathway, which allows them to recognize words automatically and read fluently.[37]

Typical Brain/Dyslexic Brain comparison



This image represents how the specific brain regions involved in reading seem to differ in kids with dyslexia compared to typical readers.

What's more, neuroimaging studies show that the process of learning to read causes those systems in the brain to become more specialized for reading, even though they originally evolved for purposes other than understanding printed language.[38] Learning to read literally changes the brain,[39] eventually allowing skilled readers to do so in a way that looks and feels effortless.

Some researchers frame the process of skilled reading in terms of an overall "language network" in the brain, in which different brain regions are connected through the process of using language. According to this model, specific regions activate differently depending on the task at hand, with some regions serving a core role in using language and others supporting those core regions in a more peripheral way.[40]

There's a lot we still don't know about how exactly reading works in the brain. True reading comprehension involves much more than just phonics and articulation, and theories of overall reading proficiency also take into account factors like background knowledge, working memory, vocabulary, language structure, and verbal reasoning.[41] But we do know which regions of the brain are involved in building the foundational skills of literacy, and that the way they're activated changes as children develop the ability to read fluently.

Brain differences in kids with dyslexia

Recent research has also revealed important differences in the brains of children with dyslexia, as compared to their peers who are typically developing readers.

Some of these differences are structural, with studies finding that in children with dyslexia, some of the areas of the brain associated with language are less developed.[42] It seems that instead of relying on the back areas of the brain that quickly process letters, link sounds, and recognize words (including the parieto-temporal region and the occipito-temporal region), kids with dyslexia may instead over-rely on the frontal area of the brain (specifically a region called Broca's area) and slowly guess words based on visual or context clues, even when they have read the word many times before. Using that frontal area makes reading a slower, more difficult process that requires a lot of effort, unlike the increasingly automatic process that using the back areas of the brain allows.[43]

Neuroimaging studies have already demonstrated that with effective, targeted instruction, the brain areas and systems that kids with dyslexia use to read can change over time.

Research also indicates that in kids with dyslexia, the pathways that integrate the different regions of the brain involved in reading are less active. In particular, a set of connections known as the left-lateralized reading network is less active in people with dyslexia compared to typical readers. It's likely that these different patterns of brain activity explain many of the challenges that kids with dyslexia experience in connecting written words with their corresponding sounds and meanings.[44]

Despite the real neurobiological differences in the brains of children with dyslexia, it's very important to note that these differences (and the challenges that come with them) are not set in stone. While further investigation is needed to gain a deeper and more comprehensive understanding of how various reading interventions can shape children's neurobiology,[45] neuroimaging studies have already demonstrated that with effective, targeted instruction, the brain areas and systems that kids with dyslexia use to read can change over time.

As one team of leading researchers puts it: "The brain systems for reading are malleable and their disruption in children with dyslexia may be remediated by provision of an evidence-based, effective reading intervention."[46]

The rest of this report will detail what exactly those "evidence-based, effective reading intervention[s]" look like — and how we can all work toward making sure that children everywhere have access to them.

Chapter Three

Evidence-Based Reading Instruction

The past several decades have seen extensive debate among educators and researchers about the best way to teach reading. Often called "the reading wars," these ongoing shifts in theory and pedagogy have shaped and reshaped instruction in American schools over the years.

In this chapter, we'll take a brief look at the history of reading instruction in the U.S. and examine the extensive evidence for systematic phonics instruction, the method that best follows the scientific data.

The whole language approach

One key point in the debates over reading instruction is whether children really need to learn phonics — that is, whether the relationships between letters and sounds need to be explicitly taught.

For many years, a leading theory of reading instruction rejected this idea, arguing instead that skilled reading comes from recognizing entire words and using context clues to figure out what unfamiliar words might be. One of the foremost proponents of this approach famously referred to reading as "a psycholinguistic guessing game" that children get better at through practice and exposure to a variety of interesting texts.[47]

This theory came to be known as the "whole language" approach, and it influenced leading instructional methods for decades — and still shapes the curricula that many schools use today. One very popular set of curricula relies on the idea that when they encounter a word they don't know, children should, instead of sounding the word out, rely on as much contextual information as possible to figure out what it is.[48] They can look at the pictures alongside the story, think about what kind of word would make sense in the sentence, and use the content of the story as a clue.

Over time, however, research revealed that whole language approaches do not provide the tools that most readers, especially those with dyslexia, need to gain fluency. Studies have shown that students who are struggling with reading need explicit phonics instruction to build their skills.[49] The whole language approach was widely discredited during the 1990s, and the growing acknowledgment of the importance of phonics led to the next major wave of theory and practice in reading instruction: balanced literacy.

What is phonics?

Phonics is the name of the process of connecting the sounds we hear to the letters we see written down.

Learning to read starts with something called **phonemic awareness** — an awareness of the smallest individual sounds that make up language. These sounds are called **phonemes**. For example, the word "run" has three phonemes (three separate sounds).

Through phonics, children learn to match those different sounds to written letters and combinations of letters. For example, they learn that the letters "ai" together often make a long "A" sound, and they practice recognizing that pattern in common words.

Over time, children start to recognize larger and larger units of sound, until they are recognizing the whole words automatically, which are often then called **sight words**.

It's important to note that through phonics, kids aren't just memorizing what words look like. They're building the ability to connect individual sounds to written letters, and eventually strings of letters — a process called **orthographic mapping**.

Studies have shown that students who are struggling with reading need explicit phonics instruction to build their skills.

Balanced literacy

Even during the height of the popularity of the whole language approach, many researchers presented compelling evidence of the importance of phonics and the limitations of teaching kids to rely on cueing strategies to identify words. It's typical for young children still learning to read to guess words based on context like pictures or the content of story. But researchers found that weak readers continue to rely on cueing strategies, while skilled ones increasingly rely on the letter-sound relationships that make up words. One leading expert noted in 1993 that that conclusion "is one of the most consistent and well replicated [findings] in all of reading research."[50]

Finally, in 2000, the federal government of the United States released a landmark study of instructional methods and concluded that explicit phonics instruction was an essential component of teaching kids to read.[51]

The study identified five key concepts at the core of every effective reading instruction program: phonemic awareness, phonics, fluency, vocabulary, and comprehension. These five components came to be known as the Five Pillars of Reading Instruction,[52] and they formed the basis of the instructional approach known as balanced literacy. Balanced literacy was intended to blend the holistic approach of whole language programs with the explicit phonics instruction that researchers had long advocated for,[53] and it quickly became the leading instructional approach in the years following the 2000 report.

In practice, however, it has become clear that balanced literacy programs are far from standardized and that even when teachers agree with the principles of balanced literacy, their actual instructional practices vary widely.[54] Furthermore, while balanced literacy programs do include phonics instruction, it is not necessarily extensive or systematic enough to meet the needs of kids who struggle with reading, and being taught to rely on cueing strategies can actually interfere with kids' ability to sound out words.[55]

Today, the growing scientific consensus is that balanced literacy programs have not been shown to be effective and do not align with the available evidence about how reading works in the brain. As a result, several of the most popular balanced literacy curricula have been widely criticized for their lack of effective phonics instruction.[56] As public and media attention to this issue has increased in recent years[57] and test scores continue to reveal troublingly low rates of reading proficiency among American children, the need for schools to adopt and implement more effective methods has become clearer and clearer.

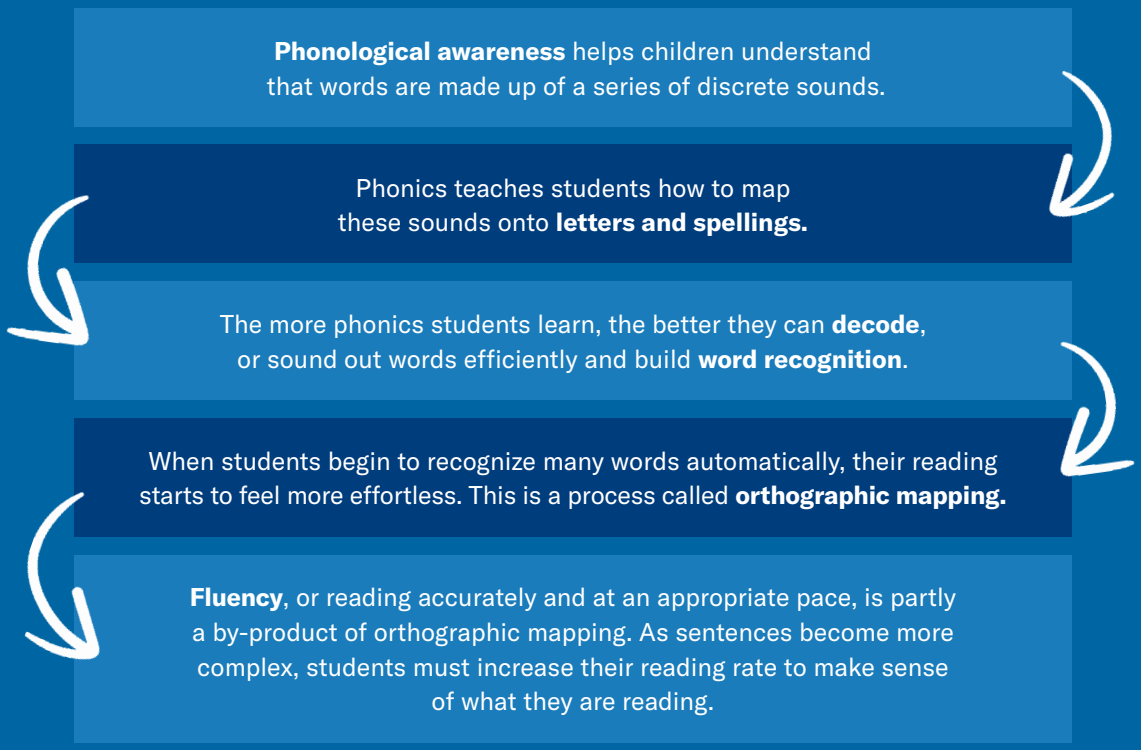
What is systematic phonics instruction?

The instructional method that has been found to be most effective for teaching kids to read is known as systematic phonics instruction. As noted above, phonics is the process of connecting specific sounds to written letters. "Systematic" means that instruction moves step-by-step through a carefully planned progression of phonics skills, from the most common and consistent letter-sound patterns to harder and less consistent letter-sound patterns.[58]

Systematic phonics instruction also includes lots of practice applying new phonics knowledge in context. After a phonics pattern is introduced in a lesson, students practice with reading materials that contain those same phonics patterns. Reading materials that are matched to specific phonics lessons are called decodable books, and almost all of the words in them contain phonics patterns that kids have been taught so far.

A very important aspect of systematic phonics instruction is that children are explicitly taught all of the letter-sound relationships they are expected to know, rather than being expected to deduce them over time through exposure. It also relies on teachers to pay close attention to how each individual student is progressing and guide them to more advanced material only after they have mastered previous lessons.[59]

Developing Word Recognition Skills



Systematic phonics instruction guides students through the development of a concrete set of skills that lead to fluent reading.[60]

The evidence for systematic phonics instruction

Numerous reviews of the available evidence have revealed a strong consensus around the effectiveness of systematic phonics instruction, especially in the early stages of learning to read and for children for whom reading does not come easily.[61]

As the authors of one analysis state, "It is uncontroversial among reading scientists that coming to appreciate the relationship between letters and sounds is necessary and nonnegotiable when learning to read in alphabetic writing systems and that this is most successfully achieved through phonics instruction."[62] Over and over, researchers conclude that skilled reading and committing whole words to memory relies on learning the connections between letters and sounds and being able to decode them quickly.[63] Neuroscientific findings back up this conclusion, with studies showing that strong reading relies on activating speech areas of the brain.[64]

It's also clear from the data that directly teaching kids decoding skills is the most effective way for kids to learn the relationships between letters and sounds, especially for kids at risk of falling behind in reading.[65] Neuroimaging studies show that the brain is not innately wired for reading and that explicit instruction is better at creating the neural pathways required for reading than "immersion" or non-explicit instruction.[66]

Broader investigations have even found that systematic phonics instruction seems to align closely with how human brains in general most easily learn language. One study taught two groups of adults a made-up language using two different instructional methods. The researchers found that participants who were taught using print-to-sound mappings (phonics) learned to read aloud more

While the brains of children with dyslexia start off different from the brains of typical readers, they don't have to stay that way — the right instruction can literally change kids' brains.

fluently than those who were taught using print-to-meaning mappings (whole language approach). Data from MRI scans aligned with these findings, and participants in the phonics group also had better reading comprehension.[67]

The findings in favor of systematic phonics instruction are so compelling that even the authors of several popular balanced literacy curricula have altered their materials to include more explicit phonics instruction.[68]

The right instruction for kids with dyslexia

Systematic phonics instruction is helpful for anyone who is learning to read, but when it comes to kids with dyslexia, the evidence is even more compelling. Getting the best instruction isn't just a plus for these kids — it's essential.

When beginning readers are taught to focus on the relationships between letters and sounds, their brain activity increases in the areas of the brain that are associated with typical reading.[69] In other words, as one report puts it: "Teaching students to sound out 'C-A-T' sparks more optimal brain circuitry than instructing them to memorize the word 'cat.'"[70] And when students see the same word again later, the changes in brain activity remain.

Additional studies have reached similar conclusions, finding that targeted instruction increases brain activity in areas related to reading and causes the brain activity of kids with dyslexia to look more like that of typically developing readers.[71]

This kind of neuroscientific research shows us that while the brains of children with dyslexia start off different from the brains of typical readers, they don't have to stay that way — the right instruction can literally change kids' brains.

It's important to note that phonics instruction isn't the only kind of instruction that kids with dyslexia need. They also need explicit instruction in the other key concepts identified by the balanced literacy approach, including phonemic awareness and comprehension skills. But it is essential that these areas of instruction be integrated with each other and with phonics skills, so that phonics is reinforced throughout the curriculum instead of being relegated to isolated lessons.

Helping all readers excel

Systematic phonics instruction is an invaluable tool for helping all kids become skilled readers, including those who are vulnerable for reasons other than dyslexia.

Studies have shown that strong decoding skills are as important for children who are learning English as they are for children who are native English speakers, and that early indicators of struggles with reading are also the same for these students.[72] As the authors of one report put it: "It is imperative that schools provide early intervention for [English language learners] in the same way that they do for [English monolingual] students, rather than waiting to see if [English language learners] 'catch up' as they gain more exposure to the language of instruction."[73]

Systematic phonics instruction can also be adapted for students who speak different variations of English at home and at school. For instance, one study of African American students who use a different dialect at home notes that while phonics instruction remains essential for these students, it should take into account differences in pronunciation and how they might impact lessons designed to support children's development of phonological and phonemic awareness.[74]

And while systematic phonics instruction is most often discussed in relation to young children who are first learning to read, it has also been shown to work for older kids who did not develop strong reading skills in elementary school.

More than phonics: The simple view of reading

Kids cannot learn to read well if they don't understand phonics, but at the same time, phonics is far from the only component of skilled reading. The so-called "reading wars" have sometimes presented phonics in direct opposition to methods that focus on exposing kids to interesting books and a broad base of background knowledge, but in reality, the two can — and should — go hand in hand.

In the 1980s, a team of literacy experts coined the term "the simple view of reading" to express their idea of how skilled reading works.[75] Their view was that truly skilled reading relies on both decoding skills (which systematic phonics instruction teaches) and strong comprehension of spoken language. Neither skill, they thought, was sufficient on its own.[76]

In the decades since, a wide body of research has come to support the simple view of reading as an accurate summary of the main components of skilled reading.[77] This perspective reminds us that much of the guiding philosophy of the whole language and balanced literacy approaches to instruction holds true, despite the significant limitations of those approaches. Kids do need comprehensive instruction across all five of the central pillars of reading instruction. They do need to understand what they read, and they need to read a variety of interesting, engaging books that introduce a wide range of content and make reading fun and meaningful for them.

As education journalist Emily Hanford puts it: "Children can learn to decode words without knowing what the words mean. To comprehend what they're reading, kids need a good vocabulary, too. That's why reading to kids and surrounding them with quality books is a good idea. The whole language proponents are right about that."[78]

In order for systematic phonics instruction to be adopted more widely and for kids everywhere to access its benefits, it's crucial to acknowledge that it is only the foundation for the much broader process of learning to find meaning, understanding, knowledge, and joy in reading.

"To comprehend what they're reading, kids need a good vocabulary, too. That's why reading to kids and surrounding them with quality books is a good idea. The whole language proponents are right about that."

— Emily Hanford, "Hard Words" (2018)

Chapter Four

Moving Toward the Science of Reading

Although the science of reading is clear, pedagogy has often been slow to catch up. But while curricula that go against the evidence are still widely used, policy and practice nationwide are steadily shifting in the direction of systematic phonics instruction.

Current trends in reading instruction

In 2013, Mississippi became a leader in literacy policy with the passage of its Literacy-Based Promotion Act (LBPA). The LBPA's mandates include training teachers in science-based reading instruction, early identification of struggling readers, and individualized reading plans for students with identified reading deficiencies.[79] Since the policy's enactment, Mississippi has seen remarkably consistent gains in the reading scores of fourth graders. Over the course of the policy's first four years, the state saw a six-percentage point increase in the share of fourth graders reading proficiently, as well as a seven-percentage point decrease in the share reading at a below-basic level.[80]

A number of other states have attempted to emulate Mississippi's approach, passing laws that mandate a wide variety of trainings, curricula, and interventions. Data from an ongoing tracking project at Education Week indicate that as of July 2023, "32 states and the District of Columbia have passed laws or implemented new policies related to evidence-based reading instruction since 2013." [81] Even New York City, the largest school system in the country, recently mandated curriculum changes to better align instruction with the science of reading.[82] And in July 2023, California became the 41st state to require screening for dyslexia and other reading delays in early grades.[83]

Despite these significant advances in policy, it remains to be seen whether changes will be implemented effectively. Survey data show that often these policies are not implemented in uniform and consistent ways, and previous large-scale efforts to reform reading instruction have been hindered by a lack of cohesive implementation.[84]

An additional challenge in the shift toward evidence-based reading instruction is limitations in teacher training and preparation. Research indicates that systematic phonics instruction is not yet a core component of many programs that train aspiring teachers. A 2020 report from the National Council on Teacher Quality found that while the number of undergraduate and graduate teacher training programs that teach systematic phonics instruction is increasing, "half of programs continue to omit key components of the science of reading."[85] And a 2019 survey found that only 55 percent of higher education professionals surveyed place "a lot" of emphasis on phonics when teaching early reading instruction, and 65 percent mentioned teaching the context cueing strategy that studies have shown is ineffective.[86]

Data from an ongoing tracking project at Education Week indicate that as of July 2023, "32 states and the District of Columbia have passed laws or implemented new policies related to evidence-based reading instruction since 2013."

Additionally, state-level regulations often fail to ensure that teachers in training learn scientifically sound methods of reading instruction. A 2021 review of state policies found that "most states still do not verify that elementary, early childhood, or special education teacher candidates know the most effective methods to teach their future students how to read."[87]

As things currently stand, balanced literacy is still the norm in countless American schools. The same 2019 survey found that of elementary school educators who teach grades K–2 or special education, 68 percent reported using balanced literacy approaches, while only 22 percent reported using systematic phonics instruction.[88] So while progress toward broader implementation of the science of reading is clearly underway, we are far from the universal access to quality instruction that our nation's students deserve.

Advocacy and advancement

In recent years, advocacy for instruction aligned with the science of reading has gained momentum from all quarters. Parents and educators are fighting for curriculum and policy change in their own communities.[89] Journalists like Emily Hanford persistently draw public attention to the discrepancies between science and practice, through projects including Hanford's popular Sold a *Story* podcast.[90] And even Lucy Calkins, one of the foremost advocates for balanced literacy in recent decades, recently rewrote her signature curriculum to emphasize that systematic phonics instruction is an essential component of teaching kids to read.[91]

Activists like Kareem Weaver, who leads the NAACP's education committee in Oakland, CA, emphasize that access to quality reading instruction is, at its core, a civil rights issue.[92] In order to mitigate the wide-ranging negative outcomes associated with illiteracy — and their disproportionate impact on children of color and those from lower-income backgrounds — it's crucial to push for reading programs that emphasize systematic phonics instruction while also integrating it with the other pillars of effective reading instruction.

We can advocate for the science of reading at all levels of our education systems:

- Advocacy at the state and local levels can push leaders to implement legislation mandating alignment with the science of reading, and to expand funding for related professional development and improved classroom materials.
- States can also change regulations around teacher training and dyslexia screening to ensure that all teachers know the most effective ways to teach reading and all kids who struggle with reading get the early intervention they need.
- Higher education institutions can prioritize preparing teachers to use systematic phonics instruction in the classroom.
- Educators can advocate for the use of systematic phonics instruction in their own schools and classrooms.
- Pediatricians can encourage early screening of language development and developing reading skills to increase the odds that kids in need of early intervention get the right help.
- Parents can familiarize themselves with the components of phonics instruction and, if their child's school is not using a phonics-based curriculum, push for change through the school administration.

The good news is that the science is clear about how we can make skilled reading a reality for kids everywhere. Now it's on all of us to bring policy and pedagogy into alignment with that goal.

How to tell if your child's reading instruction is phonics-based

In a good phonics program kids are instructed and directed through lots of practice. They're not expected to learn to read just because they're exposed to a lot of books.

- **Look at the words that your child is being asked to learn.** If they all are in the same word family or sound the same — cat, sat, bat, mat — it's phonics-based. If they are just groupings of high-frequency words — of, the, have, that — it's not a phonics-based program.
- **Is your child being told to guess?** Phonics programs don't encourage guessing based on the picture or the context. Phonics programs encourage your child to look at the letters and produce their corresponding sounds.
- **How much is your child practicing?** With phonics, there has to be lots of repetition. This might include a child learning to decode the word, write the word, and then use the word in a sentence. They're being asked to approach the same information in multiple ways, which reinforces learning.
- **Students in phonics programs may bring home decodable readers**, simple books that are written for beginning readers and contain the specific letter-sound relationships that students have already learned.

If you know the name of the curriculum your child's school is using, you can check its rating on the EdReports website, which evaluates reading programs based on their evidence base and effectiveness.

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