Narrowing the Third-Grade Reading Gap

Embracing the Science of Reading
The Challenge of Teaching All Students to Read
Far Too Many Kids Can’t Read at an Early Age

The Nation’s Poor Reading Scores Remain Stagnant

According to NAEP—the only nationwide assessment of fourth-grade reading performance—the United States experienced some improvement in the share of fourth-grade students who are reading at or above proficient levels. Unfortunately, 64% of all fourth-graders scored at basic or below basic reading levels in 2017, a rate that is alarmingly similar to a decade ago.

### NAEP 4th Grade Reading Scores Persistently Low

Percentage of Students Scoring at Each Achievement Level, 2009–2017

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2011</th>
<th>2013</th>
<th>2015</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below Basic</td>
<td>34%</td>
<td>33%</td>
<td>33%</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>Basic</td>
<td>34%</td>
<td>33%</td>
<td>31%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proficient</td>
<td>26%</td>
<td>27%</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Advanced</td>
<td>8%</td>
<td>9%</td>
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</tbody>
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### Minimal Growth in Reading Outcomes Over the Last Decade

- **5%** Percentage increase in share of fourth-grade students at or above proficiency over the past eight years
- **64%** Of fourth-graders are reading at or below basic levels on NAEP in 2017
Poor Reading Outcomes Transcend Demographics

Interestingly, struggling readers are found across student demographics. NAEP data indicates that students from minority, ELL, disabled, and low-income backgrounds are far more likely to score at below basic. However, research reveals that students from college-educated families may also face challenges with reading. In fact, an estimated 30% of fourth-graders who score below proficiency on NAEP live in households with at least one college-educated parent.

While Minority Students Are at Risk for Poor Reading Scores...

...Special Populations Are the Furthest Behind in Reading

<table>
<thead>
<tr>
<th>Demographic</th>
<th>White</th>
<th>Asian</th>
<th>Black</th>
<th>Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>22%</td>
<td>16%</td>
<td>50%</td>
<td>46%</td>
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<table>
<thead>
<tr>
<th>Special Population</th>
<th>ELL</th>
<th>SWD</th>
<th>FRPL</th>
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<tbody>
<tr>
<td></td>
<td>68%</td>
<td>71%</td>
<td>46%</td>
</tr>
</tbody>
</table>

Of struggling readers come from households with at least one college-educated parent.
States Not on the Same Page on Proficiency Standards

State Data Inflation Often Muddies the Waters of Who Can Read

While many district leaders acknowledge the imperative to improve reading outcomes for all students, reaching a consensus around how to measure student reading proficiency remains a challenge.

NAEP is an admittedly rigorous standard, but it remains the only national assessment available. Furthermore, analysis of the 30 different state-level assessments reveals nearly all states hold students to significantly lower reading standards than NAEP.

Different assessments used for fourth grade ELA nationwide

30

MA and UT only states with higher scores on NAEP than state test

States’ 4th Grade Reading Proficiency Rate Gap

0–10 11–20 21–30 31–40

Points

17 26 8 3

IA, TX, and VA have disparities of >30 points

Leaving Many Questioning, “Can This Student Read?”

There are so many definitions of what grade-level reading means depending on which measure we use. How do we know which one is right?

SUPERINTENDENT, MIDWEST DISTRICT
Assessment Debates Shouldn’t Distract from Realities

Despite the persistent debate about reading assessments, there is no question that failing to improve third-grade reading outcomes is problematic for students and districts.

Students who still struggle to read by the end of Third-Grade face significant long-term challenges. First, given that Third-Grade marks the shift from learning to read to reading to learn, struggling readers are at greater risk for falling behind in all other subjects and are less likely to attend college or secure a living-wage job.

Poor reading outcomes are potentially costly for districts, particularly in states with mandatory retention laws. Even though many district leaders report finding ways around these laws, the potential cost of retaining students is a strain on already-limited budgets.

Failing to Address the Issue Is Problematic for Students...

- **75%** Of students who do not read proficiently by third grade never reach reading proficiency in future grades
- **54%** Decrease in likelihood that struggling readers in third grade will attend college, compared to their more proficient peers
- **93M** Adults in the nation today read at or below basic levels, even though most living-wage jobs require proficient readers

...And Costly for Districts, Particularly in States with Retention Laws

- **16** Number of states requiring districts to retain third-graders who do not meet reading standards as of 2018
- **$11K** Average per pupil cost to retain students in 2017
Truth Be Told: There’s No Excuse for Poor Outcomes

The National Institute of Health (NIH) indicates that nearly all children have the cognitive capacity to learn to read, estimating that only 5% of young readers have severe cognitive impairments that would make acquiring reading skills extremely difficult.

While the remaining 95% of students have the capacity to read, not every student will learn to read under the same conditions. An estimated 30% of students will learn to read regardless of how they were taught. However, roughly half of students will need high-quality Tier 1 instruction in foundational skills, and an additional 15% of students will require additional time and support to meet their reading potential.
Almost All Students Have the Cognitive Capacity to Read

95% of elementary students, regardless of background, are cognitively capable of learning to read when they receive sufficient direct instruction on the foundational skills of reading.

- **Capable of Learning Regardless of Environment**: These students will learn how to read, regardless of instructional quality.
- **Able to Learn with High-Quality Tier 1 Instruction**: Half of students will learn to read from explicit and direct instruction in foundational skills.
- **Require Additional Time and Support**: Minimal share of students will eventually enter Tier 1 with additional attention and support.
- **Struggle with Severe Cognitive Impairments**: Small subset of students have severe cognitive disabilities and will likely struggle to read throughout their schooling.
A Different Approach Is Needed to Improve Reading

Common District Initiatives Not Improving Scores

Students’ reading struggles are certainly not due to a lack of effort. Every year, districts invest significant time and resources, yet, most districts report seeing little improvement.

In seeking ways to better address persisting reading gaps, many districts have turned to pre-kindergarten access as a strategy for narrowing the word gap and improving literacy outcomes. While research suggests a number of positive effects, a 2015 randomized-control, longitudinal study conducted by Vanderbilt University found that although preschool improves kindergarten reading outcomes, these positive effects are not sustained beyond kindergarten. Closing the third-grade reading gap requires a different approach.

### Districts Invest Significant Time and Resources in Reading...

- Extending School Days or Literacy Time Blocks
- Hiring Literacy Specialists or Instructional Coaches
- Updating Instructional and Curricular Materials
- Purchasing 1:1 Reading-Related Technology

### ...Yet Often See Minimal Lasting Results

“...It feels like we’ve tried everything and anything to improve reading, but nothing seems to really work. In the end, we keep seeing very similar outcomes.”

SUPERINTENDENT, SOUTHWEST DISTRICT

### Pre-K Helpful, but Not Sufficient

Key Findings Regarding the Effects of Pre-K on Reading, Vanderbilt Peabody Study (2015)

- **Improves Kindergarten Readiness**
  Students who attended pre-K had higher reading outcomes at the start of kindergarten

- **Effects on Reading Are Not Sustained**
  By the end of kindergarten, students who attended pre-K were no longer significantly outperforming those who didn’t attend
Good News: Science Provides a Blueprint for Reading

The good news is that multidisciplinary research provides valuable insight into how schools can improve reading outcomes for all children. For nearly 30 years, over 40 research centers nationwide that represent diverse fields—including neuroscience, linguistics, medicine, and child psychology—have examined how the human brain develops the ability to read. These various research disciplines draw surprisingly similar conclusions on the science behind learning to read and what effective reading instruction should entail.

Decades of Neuroscience Research Provide Insight on How Students Learn to Read

Science Has Implications for How to Teach Reading...
We [NICHD] have multidisciplinary [research] teams—including cognitive neuroscientists and pediatricians—who have developed a body of information on reading and the brain that can inform practice in schools and policy.

DR. G. REID LYON
National Institute of Child Health and Human Development

...And How Schools Can Help Struggling Readers Read
Every year, there are hundreds of newly published, scientifically oriented research reports on reading....There is ample research that shows how weak readers can make substantial reading gains, with a fairly large percentage developing normalized reading skills.

DR. DAVID KILPATRICK
Professor of Psychology, SUNY Cortland
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Scientific Insights on How Students Learn to Read
Human Brains Are **Not** Naturally Wired to Read

Reading and Writing Are Relatively Recent in the Span of Human Existence

One of the most important research findings from this scientific body of research is that our brains are not naturally wired to read. Research indicates that learning to read is a vastly different neurological process than learning to speak. While surrounding young children with spoken language helps them learn to speak, surrounding children with written language and reading them engaging books is not enough for most students.

As a species, our brains have not evolved to naturally read. In the span of modern human existence, reading is a relatively recent development. Compared to spoken language, which was integral to the emergence of modern humans over 200,000 years ago, the concept of written language was invented by humans only 5,500 years ago—less than 3% of human existence, and books are an even more recent invention.
Timeline of Spoken and Written Language in Relation to Human History

**198,000 B.C.E.**
*Spoken Language*
Modern humans first emerged in Africa around 200,000 years ago and communicated using spoken language.

**3,500 B.C.E.**
*Written Language*
Cuneiform, the earliest written language, dates back to Mesopotamia around 5,500 years ago.

**1439**
*Books*
Johannes Gutenberg invented the printing press, which created the first mass-produced book, The Gutenberg Bible.

**2019**
Of human existence includes written language and reading. The human brain has not evolved to learn reading naturally.
Several Brain Functions Are Involved in Reading

Learning to read requires building neurological connections between disparate regions of the brain.

Each region plays a role in various human functions—speech, sound, sight, and processing meaning—all of which are necessary for reading. The following diagrams provide a simplified overview of some of the most critical regions of the brain involved in reading.
**Visual Cortex** Recognizes Printed Letters and Words

A region of the brain that is active in reading is the visual cortex, located in the occipital lobe of the brain. This region is responsible for visual stimuli, including written and printed representations of letters and words.

**ROLE IN READING:**
Orthographic Processing

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**Auditory Cortex** Builds Oral Word Understanding

The auditory cortex is located in the temporal lobe of the brain. This area is responsible for recognizing and processing auditory stimuli. This recognition and processing of speech sounds is critical for early readers.

**ROLE IN READING:**
Phonological Processing
Angular Gyrus Associates Letters with Sounds

The angular gyrus—located in the parietal lobe—is involved in building connections between speech and print and vice versa. In addition to producing speech, comprehending it, and recognizing letters and words, a critical phase in the reading process is creating connections among all of these brain functions.

ROLE IN READING:
Sound-Symbol Connections and Semantic Processing

Frontal Lobe Produces Speech, Processes Meaning

The inferior frontal gyrus, located in the frontal lobe, is the primary region of the brain involved in speech production. The inferior frontal gyrus is also active as children gain greater fluency and accuracy in their speech and as they comprehend more complex language.

ROLE IN READING:
Speech Production, Fluency, and Comprehension
There Is No Single “Reading Region”

Reading is an incredibly complex activity that involves building neural pathways among these four discrete regions of the brain. Therefore, educators should provide sufficient direct instruction to develop the foundational skills associated with each function. This includes language fluency, phonological awareness, orthography, phoneme-grapheme correspondence, and fluency.

Interestingly, neuroscience indicates that there are physiological explanations for why it is critical for children to learn to read by Third-Grade. According to a longitudinal study conducted by UC San Francisco, the growth in volume of white matter—the neural pathways in a child’s brain—between kindergarten and Third-Grade is one of the best predictors of how well a child will learn to read. In fact, the study found that 56% of the variance in reading outcomes can be attributed to the change in volume of white matter during this critical time.

Reading Requires Building Neural Circuits Across Critical Brain Regions

Regions of the Brain Activated While Reading, as Viewed in fMRI Scans

**VISUAL CORTEX**
Recognizes visual representations of written letters and words

**AUDITORY CORTEX**
Creates meaning out of speech sounds and builds comprehension

**ANGULAR GYRUS**
Connects discrete sounds to letters in order to form words and meaning

**INFERIOR FRONTAL GYRUS**
Aids in speech production, fluency, and comprehension

Early Reading Instruction That Builds Neural Pathways Is Essential

The quality of reading instruction impacts a child’s brain white matter development—the neuropathways that connect areas of the brain

56%

Of variance in reading outcomes is accounted for by the change in volume in white matter between kindergarten and third grade
The Simple View of Reading

To simplify what is needed to become a strong reader, researchers—Philip Gough and William Tunmer—developed the Simple View of Reading, which captures the two skill sets necessary for reading comprehension. It’s a basic multiplication equation which indicates that reading is a product of a student’s ability to decode texts multiplied by his or her ability to understand the meaning of the texts. This means that developing one set of skills without sufficient development of the other set of skills will result in poor reading ability.
Research Confirms: Strong Readers Decode

Unfortunately, too many students progress in school without fully mastering all foundational reading skills. More often than not, educators place greater emphasis on language comprehension than on word decoding. One reason is because teaching comprehension using engaging books is easier than teaching phonics. As a result, a large share of young readers are encouraged to use context clues and pictures to guess words they don’t know, rather than decode them.

Numerous research studies across multiple disciplines have found that the best readers decode unfamiliar words, while poor readers guess.

The data below is from a longitudinal study conducted by Yale University that compared students’ reading ability over the course of ten years. The study found that the primary distinguishing factor between strong and poor readers in high school was the intensity of their foundational skills instruction in first grade.

Given that decoding skills are clearly necessary for future reading success and most words in English are fully or partially decodable, it is imperative that educators provide all students with sufficient, direct instruction around word decoding.

A Focus on Foundational Skills in Early Grades Is Essential for Future Reading Success

Influence of Early Decoding Skills-Focused Instruction on Reading Comprehension Ability in Later Grades

79% of the variance in high school reading ability can be accounted for by intensity of foundational skills instruction in 1st grade

87% of English words are either fully or easily decodable

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Variance</td>
<td>80%</td>
<td>60%</td>
<td>60%</td>
<td>40%</td>
<td>20%</td>
</tr>
</tbody>
</table>
Limited Phonics Instruction Compounds Future Reading Struggles

Insufficient phonics instruction in early grades can impede students’ reading ability in later grades. The data below is from the Tennessee Department of Education, which suggests that the reading ability of a sizable share of students who appear to be advanced or proficient readers in third grade declines once they reach fifth grade. Districts nationwide also report seeing similar trends among elementary readers.

Poor phonics instruction is the primary driver behind this phenomenon, also known as the “fourth-grade slump.” A student’s strong visual memory and ability to guess unfamiliar words using pictures may in fact conceal a lack of foundational decoding skills. Although these students may appear to be strong readers in early grades when reading simple text with pictures, their reading ability is likely to decline in later grades when the texts become increasingly complex.

Providing students with a solid foundation in decoding skills increases the likelihood that they will be able to read complex texts—containing unfamiliar words—independently.

Number of research studies that conclude that the absence of direct phonics and phonemic awareness instruction in early grades impedes students’ reading growth in later grades: 90

<table>
<thead>
<tr>
<th>3RD GRADE</th>
<th>5TH GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>20%</strong> Of proficient third-grade readers dropped down to basic by fifth grade</td>
<td>Proficient</td>
</tr>
<tr>
<td><strong>55%</strong> Of advanced third-grade readers no longer receive an advanced score in fifth grade</td>
<td>Proficient</td>
</tr>
</tbody>
</table>

Insufficient Phonics Is Linked to the “fourth-grade Slump”
3

What Evidence-Based Reading Instruction Looks Like
**Reading Mastery Is an Ongoing Progression**

**Phases of a Student’s Reading Development**

When teaching foundational skills throughout elementary school, research suggests educators should teach both word decoding and language comprehension in each grade, but at varying levels of intensity. Reading instruction in kindergarten through Third-Grade should have a greater focus on word decoding until students become fluent readers. Although comprehension, particularly vocabulary, should be incorporated in early-grade reading instruction, it should not be taught at the expense of providing young students sufficient practice in phonemic awareness and phonics.

### WORD DECODING

<table>
<thead>
<tr>
<th>Emerging Pre-reader</th>
<th>Novice Reader</th>
<th>Decoding Reader</th>
<th>Fluent, Comprehending Reader</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 years old and younger</td>
<td>Grades K–1</td>
<td>Grades 2–3</td>
<td>Grades 3–5</td>
</tr>
<tr>
<td>• Aware of the letters in the alphabet</td>
<td>• Distinguishes between and blends sounds</td>
<td>• Aware of the morphophonemic principles of language</td>
<td>• Decodes nearly automatically, freeing up working memory for higher-level executive functioning</td>
</tr>
<tr>
<td>• Knows that language is made up of small units called words and even smaller units called letters</td>
<td>• Aware of orthographic conventions, spelling patterns</td>
<td>• Reads more often and at increased speed (semi-fluency)</td>
<td></td>
</tr>
<tr>
<td>• Understands what books are and the kinds of experiences they can create</td>
<td>• Uses semantic knowledge to aid decoding and vice versa</td>
<td>• Has added ~3,000 decodable words to one’s lexicon</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Understands the alphabetic principle</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Develops strategies for sounding out unknown words</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Segments words into syllables, syllables into sounds</td>
<td></td>
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</tbody>
</table>
Research recommends that reading instruction should shift its focus to reading comprehension only when students demonstrate sufficient reading fluency. Once students have reached a level of automaticity in their decoding, they can then redirect some of their cognitive focus away from decoding words toward understanding the meaning of the text.

The chart below provides a sample summary of reading milestones across the early grades.

**LANGUAGE COMPREHENSION**

- Exposed to ample oral and written language through books and conversation
- Has a vocabulary of ~2,000 words and can understand ~10,000 words

- Able to recognize some words by sight
- Exposed to robust vocabulary, learning 2–3+ new words per day
- Can understand ~20,000 words

- Uses linguistic knowledge to distill meaning from text
- Can predict, retell
- Familiar with sight words and sight “chunks,” recognizable letter blends and morphemes
- Knows to reread and correct misunderstandings

- Understands the grammatical function of language
- Applies morphology (roots, suffixes, prefixes) to comprehend complex words
- Uses metaphor, inference, and analogy accurately
- Independently connects prior knowledge to text to deduce greater meaning
- Relies on reading to build ongoing knowledge
What Does the Science Mean for Word Decoding?

Direct Instruction on Decoding Skills Is Fundamental for Early Grades

It is imperative that reading instruction in the earliest grades establishes a strong foundation in word-decoding skills. Becoming a proficient reader is dependent on a young reader’s mastery of phonemic awareness (sounds that make up words), print concepts (the written representation of those sounds and words), and phoneme-grapheme correspondence (recognizing and distinguishing the relationship between speech sounds and print).

Phonemic Awareness

Direct instruction in recognizing and producing the 44 sounds (phonemes) in the English language is critical for students who are starting to learn to read, particularly for ELLs. English has more phonemes compared to Arabic with 36, Mandarin with 29, and Spanish with 24.

Mastery of Print Concepts

Recognizing letters and basic elements of print is foundational to mastering the orthography or writing system of English. Teachers should create multiple and meaningful exposures to print to introduce students to the alphabetic principle. Examples of basic elements of print include the front and back of the book, title of the book, where to begin reading, capital letters, and lowercase letters.

Phoneme-Grapheme Correspondence

Once students have acquired the alphabetic principle, teachers should explicitly explain how each of English’s 44 speech sounds maps to a letter or letter combination (grapheme). Placing sound walls in early grades’ classrooms helps students practice individual sound-symbol correspondences. To make a sound wall, teachers should pair photos of the oral pronunciation of all 44 sounds with each one’s corresponding letter or letter combination.
What Does the Science Mean for Comprehension?

Developing Good Readers Requires Ongoing Comprehension Support

Early-grade reading instructors should provide ongoing, direct instruction around comprehension skills, which are also foundational to future reading success. The content below provides a few recommendations for teaching comprehension in early grades.

**Morphological Awareness**

Young readers should expand their knowledge of morphology, or the study of how words are formed and structured. Morphology allows students to identify potential meanings of unknown words by recognizing and connecting morphemes (prefixes, roots, and suffixes). Morphological awareness can also help students build connections across multiple languages.

**Explicit Vocabulary Instruction**

Vocabulary instruction is critical in early grades, particularly for low-income students and non-native English speakers who are exposed to significantly fewer words than their peers. Research suggests that all students need to encounter a new word at least 12 times before they can easily recognize and use it.

**Expanding Background Knowledge**

When working to improve language comprehension, teachers should select books that expand upon students’ background knowledge. It is important for teachers to be mindful that not every student will be familiar with a word, concept, or cultural experience as a result of their backgrounds and past experiences. Teachers should build upon students’ existing background knowledge, while also expanding it through a diverse selection of texts.
4

The **Disconnect**
Between the Science of Reading and Schools
Most Reading Instruction Fails to Align with Science

Unfortunately, there is an alarming disconnect between what scientific research recommends for reading instruction and what actually happens in most classrooms. The majority of teachers receive minimal preparation and guidance around how to teach foundational skills, let alone learn the basic facts of human cognition and reading development. In fact, approximately 80% of elementary teachers either provide cursory instruction around phonemic awareness or do not teach it at all. Not surprisingly, most teachers encourage students to rely heavily on pictures and context clues to guess unfamiliar words, rather than emphasizing decoding.

Sufficient training and guidance on the science of reading and how to teach foundational word-decoding skills are imperative to improve reading outcomes.
Limitations of Status Quo Early Elementary Reading Instruction

60% Of elementary teachers have never been trained in strategies for teaching phonemic awareness, phonics, vocabulary, fluency, and comprehension.

95% Of early elementary classrooms spend insufficient time providing direct instruction on all English phonemes.

80% Of early elementary teachers encourage students to use pictures or context clues to identify unfamiliar words.

A look at the research reveals that the methods commonly used to teach children to read are inconsistent with basic facts about human cognition and development and therefore make learning to read more difficult than it should be....in short, what happens in classrooms isn’t adequate for many children.

MARK SEIDENBERG
Cognitive Neuroscientist, University of Wisconsin-Madison
Reading Wars Overshadow Brain-Based Research

Schools are not entirely at fault for the evident disconnect between brain-based research and classroom realities. For many decades, educators have been inundated with competing ideas about teaching reading. Those who debate reading tend to fall into one of two camps: those who believe in phonics instruction and those who believe in whole-language instruction. The ongoing reading wars—debates between these two viewpoints—make it difficult for educators to know what really works.

It wasn’t until the 1970s and 80s that scientists from various fields began studying reading as a cognitive function. Science confirmed that reading required direct instruction around phonics and foundational skills. This body of scientific research continued to proliferate but still fails to inform classroom instruction.

Reading Wars Timeline

1800s
Horace Mann
Opposed phonics in favor of whole words

1960s
Reading Wars Named
Three approaches identified: “look-say,” systematic phonics, and intrinsic phonics

1970s
Science vs. Belief
Research finds good readers decode; whole language scholars believe reading is natural

1980s
Science Confirms Phonics Is Crucial
Brain-based research identifies phonics as crucial, while whole language remains prominent in schools
In 2000, Congress assigned a National Reading Panel to comprehensively review reading research and provide schools with a report of evidence-based recommendations. The National Reading Panel concluded that schools needed to increase phonemic awareness and phonics instruction in early grades.

In response to the National Reading Panel’s recommendations, many schools adopted a “balanced literacy” approach to teaching reading. The goal of this approach is to expose students to engaging texts while providing phonics instruction. In reality, however, many teachers who have been ill-prepared to teach these skills continue to provide insufficient instruction around foundational skills.

Most districts claim they are doing ‘balanced literacy.’ In practice, this means that whole language got repackaged. People briefly teach phonics, but phonics is treated like salt on a meal. A little here and there, but not too much. The problem with teaching just a little bit of phonics is that phonics is crucial when it comes to learning how to read.

EMILY HANFORD
Hard Words: Why Aren’t Kids Being Taught to Read?
Higher Education Inadequately Prepares Teachers

Most Higher Ed Programs Fail to Teach the Science of Reading

Scientific reading research has also had minimal impact on teacher preparation programs, and the vast majority of teacher education programs fail to adequately prepare teachers to teach reading. A recent study conducted by the National Center for Teacher Quality (NCTQ) examined reading-related course and degree requirements across schools of education. The findings reveal that few teacher education programs provide any opportunities for future teachers to learn the science of reading or receive training in evidence-based instruction strategies.

Equally troubling, many teacher-licensing exams across the country do not require elementary teacher candidates and special education candidates to demonstrate knowledge of the five components of reading and evidence-based reading instruction. Given that teachers are rarely taught this information and are usually not expected to learn it, it is not surprising that many teachers struggle to provide high-quality reading instruction.
Most Schools of Education Fail to Prepare Educators to Teach Reading

- **31%**
  Of teacher preparation programs devote no coursework to reading science

- **39%**
  Of teacher undergraduate elementary education programs provided instruction in all five components of reading

- **46%**
  Of undergraduate elementary education programs teach phonemic awareness

- **23%**
  Of graduate elementary education programs teach scientifically based reading methods

Most State Teacher-Licensing Exams Fail to Test the Five Components of Reading

Percentage of State Teacher-Licensing Exams That Test Teachers’ Reading Knowledge

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Require a test of the science of reading for elementary and special education teacher candidates</td>
<td>22%</td>
</tr>
<tr>
<td>Do not require a test of the science of reading for both elementary and special education teacher candidates</td>
<td>78%</td>
</tr>
</tbody>
</table>

What these programs most often teach is not to adopt the whole language approach, but that the candidate should **develop her own approach to teaching reading, based on exposure to various philosophies and approaches, none more valid than any other.**

*KATE WALSH*

*President, NCTQ, 21st-Century Teacher Education*
Reading Education Remains Disconnected from Science

Science Has Had Little Impact on What Happens in Schools

Unfortunately, nearly every aspect of what most districts are doing is disconnected from the science of reading. Not only is it unlikely for district staff to learn this information in their education programs, but it is also unlikely that they will learn it within their school communities. A major root cause to our nation’s reading problem is the limited districtwide knowledge of the science of reading and its implications for students. To promote lasting change, school leaders and teachers need to be aware of science of reading and align their reading systems accordingly. Even though the onus largely falls on higher education institutions to provide necessary teacher training, schools and students cannot afford to wait for schools of education to change. Ultimately, all students deserve a teacher who is adequately prepared to teach them to read and a school that has evidence-based systems and supports in place.
5

The Road to Lasting Reading Success
Success Is Possible: Science Critical for Improvement

Districts That Have Aligned Systems with Science Dramatically Improve

Fortunately, large-scale reading success is achievable and has been demonstrated. Through our research, EAB has identified several districts that have dramatically improved reading outcomes, even among at-risk student populations.

<table>
<thead>
<tr>
<th>DEMOGRAPHICS</th>
<th>PERFORMANCE BEFORE</th>
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<tbody>
<tr>
<td><strong>Rapides Parish</strong>&lt;br&gt;Alexandria, LA&lt;br&gt;32 elementary schools</td>
<td>FRPL 69%; Title I: 94%&lt;br&gt;• Black: 43%&lt;br&gt;• Hispanic: 3%&lt;br&gt;• IDEA: 11%&lt;br&gt;• LEP: 2%&lt;br&gt;46%&lt;br&gt;Of kindergarteners reading on or above grade level in 2016</td>
</tr>
<tr>
<td><strong>Bethlehem Area School District</strong>&lt;br&gt;Bethlehem, PA&lt;br&gt;16 elementary schools</td>
<td>FRPL 57%; Title I: 82%&lt;br&gt;• Black: 10%&lt;br&gt;• Hispanic: 39%&lt;br&gt;• IDEA: 17%&lt;br&gt;• LEP: 6%&lt;br&gt;47%&lt;br&gt;Of kindergarteners scored at or above the DIBELS benchmark composite score in 2015</td>
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<td><strong>Grant County Schools</strong>&lt;br&gt;Petersburg, WV&lt;br&gt;2 elementary schools</td>
<td>FRPL 46%; Title I: 50%&lt;br&gt;• Black: 1%&lt;br&gt;• Hispanic: 1%&lt;br&gt;• IDEA: 18%&lt;br&gt;• LEP: 0.3%&lt;br&gt;43rd&lt;br&gt;Lowest-performing school district out of 55 districts total in the state in 2010</td>
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Interestingly, these districts did not collaborate with one another, but they all implemented a remarkably similar approach to improving reading, leading to similarly impressive results.

Our series of interviews with leaders from these districts revealed that their success was the result of integrating the science of reading into each reading-related system, rather than deploying a standalone program or initiative.

<table>
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<th>PERFORMANCE AFTER</th>
<th>WHAT THEY DID</th>
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<tbody>
<tr>
<td><strong>99%</strong></td>
<td>• Science-of-reading training</td>
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<tr>
<td>Of kindergarteners reading on or above grade level in 2017</td>
<td>• Data summits</td>
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<td></td>
<td>• Skills-based grouping</td>
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<td></td>
<td>• Summer learning focused on literacy</td>
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| **84%**          | • Science-of-reading training  |
| Of kindergarteners scored at or above the DIBELS benchmark composite score in 2018 | • New curriculum  |
|                   | • Skills-based grouping  |
|                   | • Summer learning focused on literacy  |

| **6th**          | • Science-of-reading training  |
| Highest-performing school district out of 55 districts total in the state in 2016 | • Data summits  |
|                   | • Skills-based grouping  |
|                   | • Summer learning focused on literacy  |
Road map for Improving Reading Outcomes

The framework to the right maps out four critical imperatives and their corresponding best practices for districts that are working to improve reading outcomes. These strategies derive from districts that have achieved large-scale reading success over the span of several years.

To support district leaders in deploying similar systematic change, EAB offers a series of research briefs and toolkits that details 14 best practices that collectively improve reading outcomes.

LEARN MORE
Contact your EAB Dedicated Advisor or visit eab.com
1. Develop and Sustain Schoolwide Expertise in the Science of Teaching Reading

by training teachers and principals on the science of reading and investing in internal trainers to sustain district-wide knowledge.

2. Aid Teachers in Implementing Science-Based Instruction

by aligning instructional materials, instructional guidance, ongoing coaching, and teacher evaluations to the science of reading.

3. Redesign Small Group Instruction to Target Student Skill Deficits

by grouping students by foundational skill need and pairing them with teachers who demonstrate expertise in teaching skills most relevant to student needs.

4. Mitigate Summer Slide with Engaging Summer Programming

by embedding fun, student-centered activities in summer learning programs and offering literacy suggestions for working families who are unable to utilize these programs.

1. Science of Reading Professional Development
2. Train-the-Trainer Sustainability Plan
3. Grassroots Pilot Success Models
4. Principal Literacy Champions
5. Instructional Materials Selection Tools
6. Science-Directed Literacy Look-Fors
7. Video-Based Teacher Observations
8. Literacy Implementation Evaluations
9. Skills-Based Grouping
10. Cross-Classroom Intervention Specialists
11. Camp-Style Summer Literacy
12. Online Video Enrollment Campaigns
13. Summer School Attendance Incentives
14. Parent-Facing Literacy Nudges
Visit EAB’s **Reading Resource Center**

Interested in learning more on this topic? Visit our “narrowing the third-grade reading gap” resource center at [eab.com/ReadingResourceCenter](http://eab.com/ReadingResourceCenter).

EAB’s District Leadership Forum provides ongoing support to help our members pursue the strategies needed to address the reading skill gap and integrate the science of reading into the elementary classroom. The resource center houses a wide array of related research and tools, including more information on “Embracing the Science of Reading” as well as on-demand webconferences and corresponding implementation toolkits on the following topics:

- **Develop and Promote Schoolwide Expertise in Science-Based Reading Instruction**
  Learn strategies for building principal and teacher expertise and transferring that knowledge into classroom action.

- **Redesign Small Group Instruction to Target Student Skill Deficits**
  Understand proven ways to enhance the effectiveness of small group reading instruction and intervention.

- **Mitigate Summer Slide with Engaging Summer Programming**
  Explore strategies for mitigating the impact of summer slide by improving engagement in summer reading programs and supporting students who cannot attend summer learning experiences.
Bring the **Science of Reading** into the Classroom

While our brains are naturally set up to learn to speak, learning to read does not happen on its own. Early readers must develop certain parts of the brain and build connections between brain areas that were not connected before.

EAB’s **infographic**, created for the elementary classroom, explains how our brains learn to read. Share this infographic across your district’s elementary schools to illustrate the four different areas of our brains that we use when reading and the critical skills that help develop them.

![Infographic]

**DOWNLOAD NOW**

Visit [eab.com/ReadingResourceCenter](http://eab.com/ReadingResourceCenter) or contact your Dedicated Advisor to request copies to distribute across your district.
LEGAL CAVEAT

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Sources

Endnotes
1) National Assessment of Educational Progress.
2) English Language Learners.
3) Fifty percent of English words are fully decodable; 77% of words are mostly decodable with the exception of one sound, many of which can be solved by knowledge of prefixes, roots, and suffixes.
4) All 90 studies were reviewed by the National Reading Panel.
5) The relationship between sounds and word units and the rules that govern their pronunciation.
6) The NPR recommends the five reading pillars: phonemic awareness, phonics, vocabulary, fluency, and reading comprehension.