THE hunt institute

THE SCIENCE OF READING

ISSUE BRIEF

INTRODUCTION

Early literacy proficiency is critical to later success, both in school and in life. Students who lack reading proficiency by the end of the third grade are four times more likely to drop out of high school than proficient readers – and the number is even higher for students living in poverty. Low literacy skills can also have a lasting impact into adulthood - 43 percent of adults with low literacy skills live in poverty.

Yet, despite robust research detailing the importance of reading proficiency and decades of efforts to improve early literacy instruction, the United States continues to struggle to effectively teach children to read.

The COVID-19 pandemic has significantly disrupted reading progress nationally. According to data from the National Assessment of Educational Progress (NAEP), between 2019 and 2022, average reading scores for both fourth and eighth grade students decreased by three points. In 2022, fourth grade students experienced a five-point decline, the largest since 1984. The widely used Measure of Academic Progress also reveals a three to six percentile drop between the 2019-20 and 2020-21 school years.

In addition to declining scores, achievement gaps between white students and students of color are widening. Scores from the 2022 NAEP reading assessment show a 28-point difference in reading proficiency between white and Black students, a 30-point difference between white and American Indian students, and a 22-point difference between white and Hispanic students.

BACKGROUND ON THE LITERACY MOVEMENT

Policymakers and practitioners have long debated how best to teach reading. The most common approaches to literacy in the 21st century have been phonics, whole language, and balanced literacy:

Phonics

During the 1960s and 70s, reading instruction was almost entirely focused on phonics. The goal of phonics instruction was to help students learn and use the alphabetic principle—helping them to make the connection between spoken sounds and written letters. Teachers provided explicit instruction through a combination of modeled, guided, and independent strategies, enabling the teacher to scaffold learning. However, critics argued that by emphasizing decoding, students often failed to derive meaning from print and were less engaged.

Whole Language

The whole language approach is centered on the belief that reading is a natural process, much like speaking. Therefore, whole language instruction emphasizes immersing students in language activities that are interesting and relevant to their lives. Advocates argue that teaching phonics in isolation confuses children because letters are symbols for which students do not have meaning. Consequently, in using a whole language approach, phonics instruction is not systematic. Rather,

it happens within the context of literacy activities that empower students to create meaning as they engage in reading and writing. For example, a teacher using the whole language approach may teach the "sh" sound as a child reads a text and struggles to decode the word 'shine' or as the child is writing and needs to know how to represent the sound using letters.

Balanced Literacy

In the 1990s, the balanced literacy framework emerged as a compromise in the debate between phonics and whole language – often referred to as the "Reading Wars." Balanced literacy attempts to "balance" the explicit teaching of reading skills, including phonics, while also attending to the meaning of text and incorporating authentic literacy activities. Balanced literacy is still largely practiced in classrooms today, though critics scrutinize it for not teaching phonics in an explicit and systematic way nor does it align with scientific data about how children learn to read.

THE BEGINNINGS OF THE SCIENCE OF READING

In 1997, the Director of the National Institute of Child Health and Human Development (NICHD) convened the National Reading Panel (NRP) at the request of the U.S. Congress. The NRP aimed to "assess the status of research-based knowledge," in an effort some viewed as an opportunity to settle the Reading Wars. The Panel conducted a meta-analysis of reading research and identified five pillars of instruction that contribute to reading development:

- **Phonemic Awareness**: the ability to hear and manipulate the smallest unit of sound in spoken words
- **Phonics**: letter-sound relationships
- **Oral Reading Fluency**: reading with appropriate accuracy, speed, and expression
- **Vocabulary:** understanding the meaning of words and phrases in print
- **Comprehension:** the process of making meaning of text

The findings and meta-analysis from the NRP are a critical component of the evidence-base within the science of reading. The science of reading represents the collection of evidence-based practices learned from decades of research across various disciplines including education, psychology, linguistics, and neuroscience. As the defining Movement Coalition explains, the science of reading is, **"a vast, interdisciplinary body of science-based research about reading and issues related to reading and writing."** In addition, the science of reading recognizes that the brain is not wired for reading at birth and most children need to be taught reading skills and strategies directly. As new or additional research becomes available, the science of reading will continue to evolve.

The science of reading looks to two frameworks —The Simple View of Reading and Scarborough's Reading Rope—both of which can be used to inform and create reading assessments and instructional resources for all education stakeholders.

The Simple View of Reading

The Simple View of Reading is a framework developed by Philip Gough and William Tumner in 1986 that depicts certain skills as necessary for reading comprehension to occur. Based on over 150 empirical studies, the Simple View of Reading posits that young learners need both the ability to decode and the ability to comprehend language in order to achieve reading comprehension.

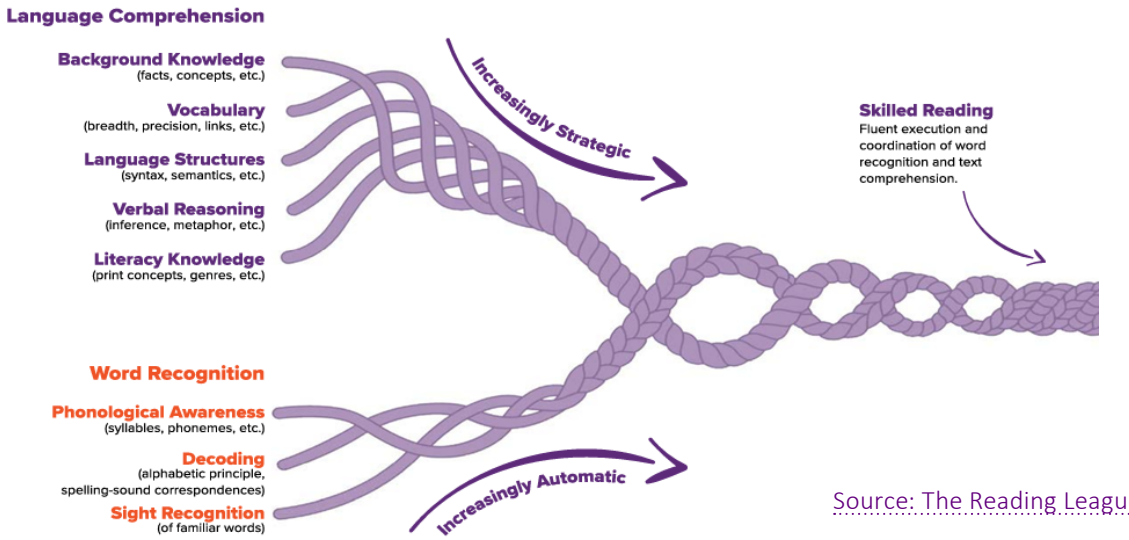
Simple View of Reading
Decoding x Language Comprehension = Reading Comprehension

Phonics, as it relates to decoding, is an important component of reading comprehension, although not the only component. Similarly, language instruction must occur to support students understanding of language. Therefore, the formula is written as multiplication, rather than addition—if a student misses one of these components, the formula would multiply times by zero, and the result for reading comprehension would be zero. Hence, reading comprehension cannot occur without both decoding and language comprehension.

The Simple View of Reading is limited in that it is a primarily cognitive theory of reading and does not address or provide instructional practices; nevertheless it helps educators understand the abilities that are required for young children to achieve reading comprehension.

Scarborough Reading Rope

In 2001, Dr. Hollis Scarborough introduced the Reading Rope to illustrate how different elements of language comprehension and word recognition must be interconnected to achieve skilled literacy.



Source: The Reading League

As learners engage in more conversation, they gain more exposure to language structure and words, which in turn expands their background knowledge and strengthens their ability to utilize vocabulary. They learn to make sense of sentence structures and how to use them effectively. As they read, they also gain the ability to decode, recognize words, and make connections between written language and sounds.

With language comprehension and word recognition, reading automaticity and strategic understanding also improve. The Reading Rope ultimately reveals that reading is a multifaceted cognitive process that represents reading acquisition.

EMBEDDING THE SCIENCE OF READING THROUGH EDUCATOR PREPARATION PROGRAMS (EPP)

While it is difficult to determine exactly how many teachers use the science of reading in their classrooms, we can surmise that the probability is higher if teachers are provided instruction on evidence-based practices in their educator preparation programs. As of 2020, 32 states required educator preparation programs (EPPs) to address the science of reading for at least some teacher candidates. A national review of syllabi also found that coverage of the science of reading within university coursework is increasing. While surveys and syllabi reviews alone are not sufficient to truly measure how effectively the science of reading is embedded in teacher preparation programs, it does provide some insight into the growing awareness of the science at the EPP level.

Best Practices from Across the Country: Policies to Improve Reading Instruction

Across the country, policymakers have taken steps to encourage or mandate instructional practices aligned with the science of reading. These efforts generally focus on three areas: teacher preparation and licensure, early instruction, and professional development.

Teacher Preparation and Licensure

Teachers are more likely to use the science of reading in classroom instruction if they have learned evidence-based instructional practices in their EPPs. In 2021, North Carolina Senate Bill 387 was signed into law, mandating EPPs provide pre-service teachers with training in the

> **"The science of reading must not be considered an ideological preference, pedagogical inclination, or inevitable swing of an instructional pendulum. Rather, the research consensus and supporting science must be applied as a matter of equity and civil rights."**
>
> ***– Kareem Weaver***

science of reading as part of their training for program accreditation approval or renewal. The Alabama legislature enacted the Alabama Literacy Act, requiring that all public education preparation programs offer a minimum of nine hours of coursework based on the science of reading. The state also stipulated that EPPs submit syllabi to the Alabama State Department of Education for evaluation. To ensure programs are in compliance with the Alabama Literacy Act, the state contracted with the Barksdale Reading Institute to provide external review of course offerings.

As for licensure, in 2021, 21 states, required elementary teachers to pass a credential exam that fully measures their knowledge of the science of required reading.

Early Assessment and Instruction

In 2020, 19 states had current or proposed legislation requiring science-based reading instruction in the early grades. As of 2022, 30 states have enacted legislation mandating the use of evidence-based literacy instruction.

As states identify and implement assessments to ensure students are receiving appropriate instruction and intervention, they should consider that data is most helpful when it alerts teachers of reading gaps early. Universal screeners, assessments administered to all students, can be beneficial for ensuring no students are overlooked. Massachusetts has approved several universal screener assessments for reading that school districts may purchase using grant funds, while Arizona mandates that each school district and charter school provide ongoing diagnostic assessments to plan evidence-based instruction and interventions for students in kindergarten through third grade. In situations where more than 20 percent of students in a school or district do not meet proficiency standards on the state reading assessment, the Arizona Department of Education will review the related curriculum and professional development to consider how evidence-based reading instruction was used.

Professional Development

Many teachers and pre-service faculty did not learn about the science of reading during their time in EPPs, including advanced degree programs. To combat this, some states have been requiring educators to participate in ongoing professional development rooted in the science of reading.

Colorado requires local education agencies that receive intervention funds or literacy grants to collect documentation from all kindergarten through third grade teachers to ensure they are trained in evidence-based reading practices. North Dakota enacted legislation in 2021 requiring statewide professional development in science-based reading instruction practices. The North Dakota Department of Public Instruction has also incorporated the Foundations of Reading and Language Essentials for Teachers of Reading and Spelling (LETRS), evidence-based professional learning designed to equally support both new and in-service educators for explicit reading instruction.

There is also a growing interest in ensuring that pre-service faculty in EPPs receive professional development in the science of reading. The Mississippi Momentum Partnership is an example of support provided to pre-service faculty. Through this initiative, faculty that taught reading at 15 public and private EPPs in Mississippi were provided training, mentoring, texts, and seminars around the science of reading.

STATES LEADING ON EARLY LITERACY

There has been rapid growth in interest for policies related to the science of reading. Twenty states passed or were considering measures related to the science of reading as of fall 2021; by spring 2022, over 35 states, have passed or considered legislation focused on the science of reading.

Mississippi

The Magnolia State has been a national leader and trailblazer with respect to incorporating the science of reading into instruction and teacher preparation. In collaboration with the Barksdale Reading Institute, the University of Mississippi's Center for Excellence in Literacy Instruction, and others, state leaders began taking steps to embed the science of reading across educations sectors in 2013. These efforts included:

- Funding professional development for teachers in the science of reading
- Embedding the simple view of reading in professional learning
- Providing instructional coaches to K-3 classroom teachers in schools identified as most in need
- Providing mentoring related to the science of reading to faculty members of teacher preparation programs

Since making these changes, Mississippi's students have shown considerable reading progress. The state ranked first for reading gains on the 2019 NAEP and fourth grade reading scores grew by four points from 2017 to 2019, tying the national average – despite average reading scores declining nationally during that same timeframe. Post-pandemic, Mississippi was also one of the few states that saw no significant declines in NAEP reading scores among fourth grade students.

Virginia

To address growing concerns of learning loss and reading proficiency post-pandemic, the Virginia General Assembly, through bipartisan leadership, passed the Virginia Literacy Act (VLA) in April 2022. The VLA requires:

- Individualized reading plans for students who are not meeting literacy benchmarks
- Teachers use evidence-based literacy curriculum and literacy screeners
- Reading specialists in consultations with classroom teachers and oversee interventions
- Pre-service teachers to demonstrate mastery of science-based reading research and evidence-based literacy instruction.

In 2023, the Virginia legislature passed Senate Bill 616 which added provisions to the VLA—expanding evidence-based literacy initiatives to include students from fourth- through eighth grade in the state's literacy movement. Currently, no other states have applied their literacy measures to reach middle school students.

Tennessee

In 2021, the state allocated over $120 million to launch Reading 360, a statewide initiative providing the following literacy supports for administrators and teachers:

- Tennessee Universal Reading Screener suite of tools to administer to all K-3 students
- Reading Summit Professional Development so teachers can have access to optional asynchronous monthly trainings for the implementation of science-based instruction
- Partnership with the University of Tennessee to establish the Reading Research Center to improve classroom instruction and teacher preparation

In 2020, Tennessee students had one of the lowest literacy rate levels nationally, however during the 2020-21 school year, 75 percent of Tennessee districts saw improvement in reading scores across grade levels.

North Carolina

In 2021, North Carolina enacted SB 387, the Excellent Public Schools Act of 2021, to modify the implementation of the North Carolina Read to Achieve Program. Those modifications take steps to align teaching practices with the science of reading, including:

- Training teachers in the NC Pre-K program on the science of reading with age-appropriate resources
- Requiring educator preparation programs to include coursework in the science of reading for elementary and special education teacher candidates, including evidence-based instruction and assessment

MISCONCEPTIONS OF THE SCIENCE OF READING

The science of reading is not:

- A program for instruction that provides a scope and sequence or curriculum
- Specific books or leveled readers for students and teachers
- A literacy method
- An ideology or philosophy
- A political agenda
- A fad, trend, or new idea
- A one-size-fits-all approach
- A single specific component of instruction such as phonics

- Aligning the state literacy standards to the science of reading
- Providing families digital resources and activities that align with the science of reading

In 2023, after a second year of implementing the Excellent Public Schools Act, North Carolina K-3 students are showing marked improvement in reading—kindergarten students have shown an increase of 26 percentage points from the initial beginning-of-year benchmark to April.

THE SCIENCE OF READING IS FOR ALL STUDENTS

Students with Learning Differences

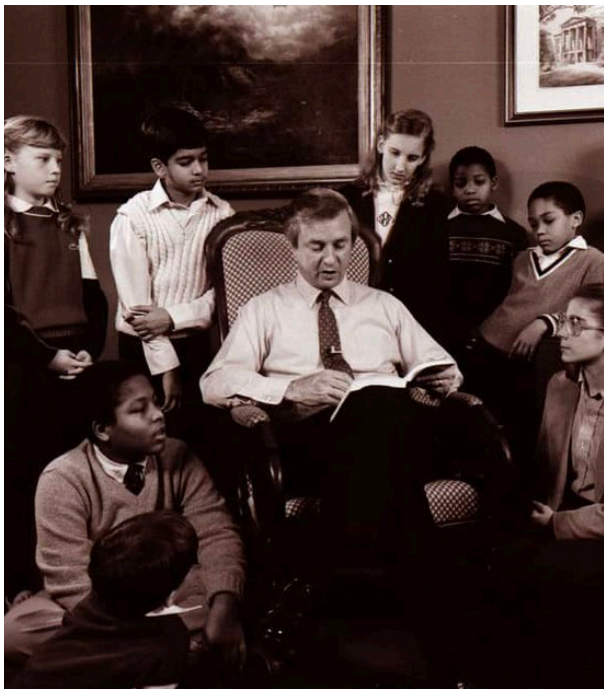
To address the instructional needs of students with disabilities, the Individuals with Disabilities Education Act (IDEA) mandates that individualized education plans (IEPs) are crafted for each student. Despite this, more than 60 percent of students with specific learning disabilities experience significant difficulty learning to read. The District of Columbia has taken action by enacting D.C. Law 23-191, which mandates the Office of the State Superintendent of Education support schools in identifying reading difficulties and establishes professional development requirements for educators on the topic of reading difficulties. Additionally, 38 states have implemented a universal screener to identify students with reading challenges. By identifying these students early and providing targeted interventions, educators can help students achieve reading proficiency.

English Language Learners

Systematic and explicit instruction in letters and sounds are imperative for young readers. Research shows that multilingual learners or English language learners (ELLs) also benefit from reading instruction that includes phonemic awareness, phonics, fluency, vocabulary, and comprehension and respond to interventions for phonological awareness. However, ELLs may also need tailored attention in oral language proficiency to achieve optimal reading proficiency. Fostering oral language skills through explicit instruction and practice can strengthen language comprehension for ELL students and further build connections for literacy. It is also important to note that the science of reading is derived from international research, thus these instructional practices are not solely based on English linguistics but can be found worldwide.

GUIDING QUESTIONS

01. How do students in your state perform on state, national, and international reading assessments? Are there differences in performance across different student populations?
02. Does your state require that EPPs align coursework with the science of reading? If so, how?
03. Are teachers in your state required to utilize evidence-based reading instruction? If so, how is this policy measured and with what degree of accountability? If not, what rules guide reading instruction in your state?
04. Does your state require that teachers receive professional development aligned with the science of reading? If so, what are those policies?
05. Has your state conducted a landscape analysis to determine if pre-service programs and faculty knowledge are aligned with the science of reading?
06. What are the greatest barriers to implementation of instruction aligned with the science of reading?



Established in 2001, The Hunt Institute honors the legacy of James B. Hunt, Jr., the former governor of North Carolina who distinguished himself as an ardent champion of education.

The Hunt Institute brings together people and resources to inspire and inform elected officials and policymakers about key issues in education, resulting in visionary leaders who are prepared to take strategic action for greater educational outcomes and student success.

In 2016, The Hunt Institute became an independent, nonprofit entity and joined forces with Duke University's Sanford School of Public Policy to pursue research, educational partnerships, and events related to improving education policy.

Learn more at www.hunt-institute.org.

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