



K-12 POLICY BRIEF

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THE SCIENCE OF READING

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EXECUTIVE SUMMARY

OVERVIEW OF THE SCIENCE OF READING

The science of reading comprises an understanding of research-based reading, reading development at different stages, and reading instructional practices (e.g., explicit phonics, vocabulary, and comprehension instruction).¹ Put simply, it describes the research behind how students learn to read. Petscher et al. (2020) define the Science of Reading as “a phrase representing the accumulated knowledge about reading, reading development, and best practices for reading instruction obtained by the use of the scientific method.”² Such reading development and practices rely, in part, on a foundation of neurological research which explains how the brain functions to enable learners to connect sounds and oral language to letters and words prior to comprehending the meaning of full passages.

POLICY STATUS AND CONTEXT

The rate of states implementing policies requiring educators to use instructional methods aligned to the science of reading has increased in recent years. **Currently, 29 states plus the District of Columbia have passed legislation requiring that reading instruction aligns with the science of reading.** The science of reading gained momentum in states’ policies amidst the following contextual factors:

- The **body of empirical research** supporting the science of reading continues to grow and gains popularity and attention from researchers and policymakers.³
- Recent evidence reveals that **widely popular balanced literacy curricula are not evidence-based** and do not support the reading development of all students.⁴
- States aim to **follow Mississippi’s lead**, which saw gains in reading scores after overhauling the state’s approach to reading instruction and reading teacher preparation starting in 2013.⁵

IMPLICATION CONSIDERATIONS

Legislators and proponents of science of reading policies hope the policy requirements will result in educators using evidence-based reading approaches, thus improving students’ reading outcomes.⁶ However, changing instructional practices through state-level policy is a **challenging, slow, and expensive process.**⁷ Three critical implementation considerations of science of reading policies, which affect both state education agencies and local districts, include:

- **Developing Aligned Curricular Resources:** Many districts use curricula not aligned with the science of reading, creating a need for new, aligned instructional and intervention materials. Reviewing, selecting, and purchasing new curricular resources aligned to the science of reading is expensive and time intensive for districts and states.⁸
- **Resource-Intensive Training Requirements:** Implementing instructional practices aligned with the science of reading requires training teachers on the instructional approach. Training teachers on a new reading approach presents a considerable cost for states and districts and requires a substantial time investment for educators.⁹
- **Gaining Teacher Buy-In:** Effectively implementing science of reading policies requires gaining buy-in from teachers, as teachers and school leaders can hold strong positions on reading instruction and conflict can result from challenging deeply held reading philosophies.¹⁰

POLICY PERSPECTIVES

Science of reading policies benefit from broad bipartisan support within state legislatures.¹¹ Both traditionally conservative and traditionally liberal states have implemented science of reading laws.¹² However, external to legislative chambers, the science of reading has both fierce advocates and strong critics.

While research-based and critically analyzed, the science of reading and its components sparks debate among education stakeholders and the media. What some consider an extension of the “reading wars”—a decades-long controversy on whether students should learn to read using phonics or whole-language instruction—has shifted to include “what constitutes scientific evidence, how much value we should place on scientific evidence as opposed to other forms of knowledge, and how preservice teachers should be instructed to teach reading.”¹³

Proponents of science of reading policies argue that embedding research-based practices into legislation will improve students’ reading outcomes by ensuring evidence-based instructional practices and teacher preparation.¹⁴ Alternatively, opponents to science of reading policies support reading instructional approaches with less emphasis on phonics and claim that science of reading mandates are too prescriptive, phonics-heavy, costly, and developed by actors too far removed from the classroom.¹⁵

SCIENCE OF READING POLICY

BACKGROUND

Recently passed legislation in over two dozen states demonstrates the growing momentum around evidence-based literacy practices and the science of reading.¹⁶ The rate of states implementing science of reading policy has increased in recent years. While one to two states implemented science of reading legislation each year from 2013 to 2018, seven states implemented science of reading legislation in 2019, 13 states in 2021, and so far, six states in 2022.¹⁷ **Currently, 29 states plus the District of Columbia have passed legislation or state guidelines aligned with science of reading instruction (Figure 1).**

Figure 1: States with Science of Reading Legislation

Alabama	Kentucky	North Dakota
Alaska	Louisiana	Oklahoma
Arizona	Michigan	Pennsylvania
Arkansas	Minnesota	Rhode Island
California	Mississippi	South Carolina
Colorado	Missouri	Tennessee
Connecticut	Nebraska	Texas
Delaware	Nevada	Utah
D.C.	New Mexico	Virginia
Florida	North Carolina	West Virginia

Source: Education Week¹⁸

These policies comprise a variety of components of literacy instruction, including teacher training, curriculum, and how schools identify students in need of additional support. Figure 2 details six different components of science of reading policy and how many of the 29 states with science of reading legislation include these components in their policies.

Figure 2: The Number of States with Different Components of Science of Reading Policy

CATEGORY	NUMBER OF STATES
Teacher preparation: Requires institutes of higher education and/or teacher preparation programs to review their course offerings or instructional approaches; requires changes that would bring instructional approaches in line with evidence-based	16 states

CATEGORY	NUMBER OF STATES
practices; requires courses to cover certain topics related to early reading.	
Teacher certification or license renewal: Requires preservice teachers to pass a test demonstrating their knowledge of how to teach reading in order to receive a teaching certificate or requires in-service teachers to earn a credential or pass a test to renew their teaching license.	14 states
Professional development or coaching: Requires teachers and/or other educators to undergo professional development in evidence-based reading instruction and/or institutes a program of instructional coaching.	25 states
Assessment: Puts forth requirements for the type of assessments that schools can use to identify reading difficulties or measure reading progress, or mandates that schools undergo a review process when selecting these assessments.	17 states
Materials: Puts forth requirements for the type of curricula and other materials that schools can use to identify reading difficulties or measure reading progress, or mandates that schools undergo a review process when selecting these materials.	16 states
Instruction and/or intervention: Requires teachers to use specific instructional methods or provide a specific type or frequency of intervention for struggling readers.	19 states

Source: Education Week¹⁹

Laws and initiatives related to the science of reading come at a pivotal moment when reading assessment scores are declining, as indicated by National Assessment of Educational Progress (NAEP) scores, and as evidence mounts against alternative instructional approaches.²⁰ The “Reading Wars” of the 1990s saw debate between whole language instruction and phonics-based instruction. Whole language instruction supports the idea that “kids will learn to read naturally if you expose them to a lot of books,” focusing on the meaning and ideas in texts rather than on phonics instruction, which teaches the association between letters and sounds.²¹ While balanced literacy arose as a middle ground between these two camps, the approach does not include explicit phonics instruction and instead relies on teachers’ professional judgment and the pillars of three cueing (i.e., guiding students to guess an unknown word using pictures and context clues), independent reading time (i.e., unstructured time for silent reading), and leveled reading (i.e., assigning texts aligned to students’ reading level).²² This

approach does not align with the science of reading, which focuses on a structured approach to teaching foundational literacy skills.²³ Balanced literacy approaches are extremely popular – Lucy Calkins’ balanced literacy curriculum, Units of Study, is the third most widely used core reading program in the United States.²⁴ However, recent evidence reveals that balanced literacy curricula are not evidence-based and do not support all students.²⁵

Following this context, states’ reading policies based on the science of reading have gained popularity as states aim to improve students’ reading abilities with an evidence-based approach. In particular, science of reading legislation found an increased momentum among state policy agendas following a series of laws that Mississippi passed starting in 2013 to re-make the state’s approach to reading instruction and reading teacher preparation. After Mississippi achieved gains in reading scores on the 2019 NAEP assessment, other states aimed to follow Mississippi’s model with the hopes of achieving their own gains in reading scores.²⁶

The figure below highlights recent laws related to the science of reading passed in four states: North Carolina, Connecticut, Pennsylvania, and Arkansas. Notably, states’ science of education policies vary in their specific requirements, implementation support, and violation consequences.

Figure 3: State Policy Spotlight: Recent State Laws on the Science of Reading

NORTH CAROLINA
Passed in April 2021, North Carolina’s new reading law requires educator preparation programs in the state to train elementary teachers in the science of reading, and it requires continuing education credits in courses “grounded in the science of reading” for teacher license renewal. The law also mandates that schools design “Individual Reading Plans” for struggling students in K-3.
CONNECTICUT
Connecticut passed a law in 2021 requiring the state department of education to develop a research-based reading plan to improve performance for struggling students, and to establish a Center for Literacy Research and Reading Success. The law also required the Center to approve at least five evidence-based reading curriculum models or programs, and at least five assessments. Starting in the 2023-24 school year, districts have to use approved curricula and assessments.
PENNSYLVANIA
The Pennsylvania state board of education requires that teacher preparation programs in the state include instruction in “structured literacy” for all certification programs in early childhood, elementary/middle, special education, English as a second language, and reading specialist. The board also required

that in-service teachers in these areas be trained in “structured literacy.” The term is defined by the board as “systemic, explicit instruction that provides a strong core of foundational skills in the language systems of English,” and integrates listening, speaking, reading, writing, and spelling.

ARKANSAS
The state made three-cueing illegal in April, with the passage of a law that banned schools from using the “three-cueing system model of reading based on meaning, structure and syntax, and visual, which is also known as ‘MSV.’” The law also banned schools from using instruction that relies on “visual memory as the primary basis for teaching word recognition.” Schools that violate the law could lose 10 percent of their state funding.

Source: Education Week²⁷

EVIDENCE FOR THE SCIENCE OF READING

Current conceptualizations of the science of reading intentionally avoid a narrow scope, moving beyond a strict understanding of the science of reading that supports phonics alone. In its seminal report on the most effective approaches to reading instruction, the National Reading Panel (NRP)—ordered by Congress and organized by the National Institute for Child Health and Human Development and the U.S. Department of Education—identifies the five key components of reading instruction: phonemic awareness, phonics, fluency, vocabulary, and comprehension, which are aligned with the Science of Reading.²⁸ Although the science of reading comprises more than five key components, the following components appear in numerous studies on reading development and effective reading instruction.²⁹

Figure 3: Key Components of the Science of Reading

KEY COMPONENT	DEFINITIONS
Phonemic Awareness	Instruction in phonemic awareness [...] involves teaching children to focus on and manipulate phonemes in spoken syllables and words.
Phonics	Phonics instruction is a way of teaching reading that stresses the acquisition of letter-sound correspondences and their use in reading and spelling.
Fluency	Fluent readers are able to read orally with speed, accuracy, and proper expression [...] Two instructional approaches, each of which has several variations, have typically been used to teach reading fluency [i.e., guided repeated oral reading, independent silent reading].

KEY COMPONENT	DEFINITIONS
Vocabulary	There are two types of vocabulary—oral and print. A reader who encounters a strange word in print can decode the word to speech. If it is in the reader's oral vocabulary, the reader will be able to understand it. If the word is not in the reader's oral vocabulary, the reader will have to determine the meaning by other means, if possible. Consequently, the larger the reader's vocabulary (either oral or print), the easier it is to make sense of the text.
Comprehension	Comprehension is defined as "intentional thinking during which meaning is constructed through interactions between text and reader" (Harris & Hodges, 1995). Thus, readers derive meaning from text when they engage in intentional, problem-solving thinking processes.

Source: National Institute of Child Health and Human Development³⁰

Note: This figure does not present a comprehensive set of definitions, or an exhaustive list of successful reading elements identified through the literature on the Science of Reading. Rather, it means to present a high-level overview of notable elements that appear in the following sections.

EVIDENCE SUPPORTING THE SCIENCE OF READING

Recent literature on the Science of Reading highlights how multiple key components concurrently inform instruction to produce a positive impact on student reading development. Young children begin the process of learning to read by first developing alphabetic decoding skills, which requires the foundational skills of letter knowledge and phonological awareness.³¹ Yet, without proper instruction, students cannot deconstruct words into codable segments, especially words that defy common patterns.³² To effectively read and write, **students must form connections between a text and its meaning.**³³ Phonics instruction focuses on enabling children to understand grapheme-phoneme correspondences, allowing children to decode words and draw from their existing vocabulary to assign meaning to each word.³⁴ As students develop as readers, alphabetic decoding becomes automatic while phonological processes remain important as students progress towards orthographic learning and fluency.³⁵ As students move beyond alphabetic decoding and word recognition, text comprehension requires additional skills to draw meaning from the reading.³⁶ A critical component within the knowledge construct is vocabulary. Although vocabulary instruction alone does not increase reading comprehension, students receiving vocabulary interventions perform better on comprehension assessments that include taught words than students with no intervention.³⁷

PHONEMIC AWARENESS

Phonemic awareness instruction significantly and positively impacts students' reading outcomes, including comprehension, word reading, and spelling.³⁸ In the seminal NRP report, researchers present findings from a meta-analysis of 52 experimental and quasi-experimental studies, concluding that explicit phonemic awareness instruction supports all students in gaining this foundational skill, both in the short- and long-term, that phonemic awareness is a transferable skill that expands as students apply it to reading and writing activities, and that phonemic awareness skills improve students' reading (e.g., word reading, pseudoword reading, comprehension) and spelling capabilities in the short- and long-term.³⁹ Additional empirical studies from the past few years similarly find statistically significant, positive impacts of phonemic awareness instruction on students' reading skills.⁴⁰

Phonological awareness (i.e., the early development of basic speech and sound identification, such as rhyme and syllable awareness, which includes phonemic awareness) comprises a critical skill in understanding how sounds connect. Therefore, identifying young students with deficiencies in phonological skills enables educators to identify those at risk of reading challenges.⁴¹

PHONICS

Systematic phonics instruction helps students learn to read, significantly more so than alternative or no phonics instruction. The NRP's phonics-centered meta-analysis of 38 experimental and quasi-experimental studies shows that phonics instruction positively and significantly impacts students' growth in reading compared to students who received unsystematic or no phonics instruction.⁴² Additional empirical studies similarly support the positive impacts of phonics instruction.⁴³ **Additionally, building student understanding of letter-sound correspondence demonstrates particular importance in developing literacy in students with or at risk for reading challenges and those for whom English is a second language.**⁴⁴

FLUENCY

Fluency supports reading comprehension, as students who struggle to decode and recognize words are also likely to struggle to understand what they are reading. According to the IRIS Center, "fluency develops when students practice reading and rereading words, passages, or other texts with a high degree of success."⁴⁵ Reading fluency can be seen as the "culmination of early reading skill development," because achieving reading fluency requires phonological awareness, alphabet knowledge, and word decoding skills.⁴⁶ As

described by Duke et al., fluency functions as the connection between decoding and comprehension as students build reading accuracy and automaticity.⁴⁷ Numerous studies, both seminal and current, find positive impacts of fluency interventions and instruction on students' reading development and comprehension.⁴⁸ **Given the positive impact and predictiveness of oral reading fluency, teachers should provide opportunities for repeated oral reading practice to develop fluency skills.** The NRP finds that instructional approaches that encourage repeated oral reading increase reading proficiency instead of silent reading.⁴⁹

VOCABULARY

Teaching vocabulary using instructional methods based on active processing effectively develops students' vocabularies, which supports comprehension. According to Wright and Cervetti, teaching word meanings supports comprehension when a given text contains the taught words. Specifically, instruction demonstrates greater effectiveness when students engage in active learning processes, such as comparing and contrasting word meanings and using new words in a sentence, compared to a definition or dictionary-based approach.⁵⁰ While there is less evidence supporting vocabulary instruction compared to other components, research indicates that vocabulary instruction that **comprises a variety of methods, including direct and indirect methods, engages readers, and provides exposure to different texts** can support vocabulary acquisition.⁵¹

COMPREHENSION

Multiple reading components and skills (e.g., phonological awareness, phonics) support comprehension, but comprehension-focused instruction must occur in tandem with other components and with active reading strategies to support literacy.⁵² According to research by the NRP, formal instruction in multiple comprehension strategies improves students' text understanding, information use, and overall reading comprehension skills.⁵³ **Additionally, researchers find that expository text structure interventions show positive impacts on comprehension across elementary and secondary levels.**⁵⁴

CONSIDERATIONS FOR IMPLEMENTATION AND IMPACT

While states have signed these policies and guidelines into law, translating policy into classroom practice results in a challenging, slow process.⁵⁵ Science of reading policies have both supporters and critics, as discussed in the following

section. However, top-down mandates requiring teachers to change deeply held practices are likely to be met with resistance.⁵⁶ Legislators developing science of reading policies hope that the policy requirements and guidelines will lead to educators using evidence-based reading approaches resulting in improved reading outcomes for students.⁵⁷ However, policy does not reflect a quick fix for changing reading outcomes, and can often have unintended consequences.⁵⁸

Accordingly, the main implementation considerations and impacts related to science of reading policies, which can impact both state education agencies and local districts include:



Developing
Aligned Curricular
Resources



Resource-
Intensive Training
Requirements



Gaining Teacher
Buy-In

DEVELOPING ALIGNED CURRICULAR RESOURCES

As new science of reading policies reflect a shift from balanced and guided reading approaches used in many districts across the county, states and districts must approve, purchase, or develop new curricular materials aligned to the science of reading.⁵⁹ Transitioning to new curricular resources aligned to the science of reading is both expensive and time intensive for districts and states. However, if districts continue to use curricula not aligned with the science of reading, then not only will teachers lack effective materials for teaching in a way aligned with the science of reading (and state law), but there will be a gap between teacher trainings and materials.⁶⁰



Districts in states with recently passed science of reading policies face decisions around their primary grades reading curriculum, for example: "Do they buy new products, or try to work with what they have? Do they wait to roll out new curricula until they get formal approval from the state, or start making changes now?"⁶¹

Complicating the selection of a new curriculum aligned to the science of reading are politically motivated laws banning certain equity-related topics: "A science of reading framework calls for students to engage deeply with a variety of texts. But what happens when those texts become the target of political backlash to curricula that teach about

equity, diversity, and inclusion?”⁶² In addition to selecting new instructional materials, in many cases schools must also get new books and reading material, particularly if they used leveled texts (i.e., texts that are part of a balanced literacy curriculum and align with a student’s reading level).⁶³

Some states, such as Connecticut, publish a list of approved curricular and intervention materials, while others, such as North Carolina, leave the choice to districts but require they select material aligned to the science of reading.⁶⁴ In states whose policies require the development of a list of approved resources, this responsibility falls to the state department of education or the state board of education. For example, Connecticut’s “Right to Read” law, passed in 2021, requires the State Board of Education to establish a Center for Literacy Research and Reading Success, which, among other responsibilities, must approve “at least five reading curriculum models or programs to be implemented by districts.”⁶⁵ For states whose policies do not require the state to create a list of approved curriculums, districts and local boards of education have the responsibility for vetting and selecting new curricular and intervention materials aligned with state requirements.⁶⁶ Regardless of whether districts choose from a list of pre-approved curricula or have full autonomy to select aligned resources, reviewing new curricula for alignment with science of reading, selecting a new curriculum, and implementing it in early primary grades throughout the district requires a significant investment of time and resources from district leaders.⁶⁷

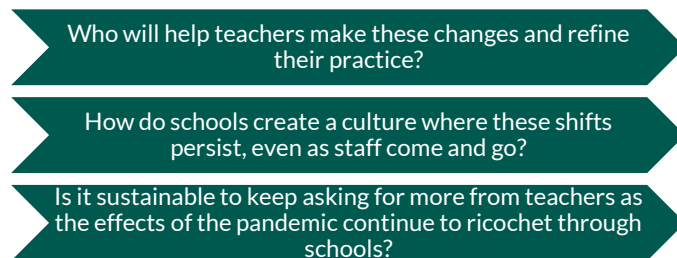
In addition to curricula and intervention materials, some states’ policies also require professional development for educators and re-vamping teacher preparation programs so that they teach methods align with the science of reading. Developing these programs will also require time and financial resources.⁶⁸

RESOURCE-INTENSIVE TRAINING REQUIREMENTS

Training teachers to implement instructional practices aligned with the science of reading requires substantial time and financial resources. States’ science of reading policies often mandate implementing instructional practices that are new to teachers, requiring training on new teaching methods, either by law or in practice. However, this training represents a considerable cost for states and districts and requires time away from teaching for educators.⁶⁹ Some states take advantage of federal Covid-19 ESSER funding to fund state-wide trainings to teach educators a science of reading method for teaching reading.⁷⁰

Overall, states implementing science of reading policies face significant logistical questions, as highlighted in the figure below.

Figure 4: Planning Questions for Shifting to a Science of Reading



Source: Education Week⁷¹



For example, North Carolina’s science of reading policy mandates that teachers in Grades 3-5 receive the Language Essentials for Teachers of Reading and Spelling (LETRS) training, an intensive, two-year program focused on reading and comprehension instruction. The LETRs training costs North Carolina \$54 million to implement and requires approximately 160 hours for teachers to complete.

A North Carolina Kindergarten teacher “spent hours going through state-mandated training designed to teach the foundations of reading science, processing it with colleagues, and trying out new ideas in his classroom” after North Carolina passed legislation requiring schools to teach the “science of reading.” He described the process as ““very, very intense.”

Additionally, district leaders had to identify ways to fit the training into teachers’ schools, amidst teacher and substitute shortages. In some districts, teachers had to dedicate time outside of their contracted hours to the training, and as North Carolina did not provide a stipend, some teachers were not paid for this time, while in other districts, teachers received a stipend ranging from \$250-\$1000. In some districts, teachers took on additional students so others could attend training.

An elementary teacher in Charlotte-Mecklenburg schools notes that the training schedule “was a struggle” and “caused a lot of resentment, because we were already stressed, already overworked.”

Source: Education Week⁷²

Overhauling teaching practices throughout an entire state is challenging, and often overwhelming, for district leaders,

school leaders, and teachers. Recognizing the challenge of implementing a new reading philosophy, Mississippi funded reading coaches in low-performing schools to support implementation.⁷³

Notably, training focused on teaching educators about the science of reading approach must also go beyond providing background on the science behind the science of reading and its components to offering practical knowledge on how teachers can apply these principles and incorporate the science of reading into their daily literacy instruction.⁷⁴

GAINING TEACHER BUY-IN

As teachers' and school leaders' positions on reading instruction can also be strong and difficult to change, and challenging deeply held reading philosophies may also create conflict, effectively implementing science of reading policies requires gaining buy-in from teachers. Indeed, “[f]or many teachers in [...] states pursuing ‘science of reading,’ the demands to change will require a seismic shift in how they teach and a complete rethinking of their best practices and beliefs.”⁷⁵ Science of reading-based instructional practices can vary greatly from guided and balanced reading approaches teachers are used to and were trained in during their teacher preparation program. Shifting to a science of reading model thus, in many cases, requires educators to abandon deeply held beliefs about how to teach reading to children in favor of a new approach, which may be hard for many teachers to accept. Evidence from North Carolina’s experience with their science of reading law reveals that implementation requires considerable effort to gain teacher buy-in, through, for example, incentives and encouragement.⁷⁶

Additionally, teachers may bristle at an approach that many see as valuing scientific findings over teacher experience.⁷⁷ Indeed, “the idea that experimental studies have more insight into best practice than teachers’ experiences and observations in the classroom feels like an attack on many teachers’ philosophy,” as balanced literacy views teachers as the expert.⁷⁸ Alternatively, “teacher knowledge and professional judgment still play a big role in helping students advance in a science of reading framework. But it rejects the idea that teachers can use any tool in their toolbox. It hands them a new toolbox.”⁷⁹

POLICY PERSPECTIVES

Policy actors for and against science of reading policy do not divide along traditional liberal/conservative political lines. State legislatures have implemented science of reading laws in both traditionally conservative and traditionally

liberal states alike, and science of reading policies typically have widespread bipartisan support from legislators. For example, when Connecticut passed a science of reading law in 2021, all of the state’s 21 senators not only supported the law unanimously but every senator either sponsored or co-sponsored the bill regardless of political affiliation.⁸⁰ While North Carolina’s science of reading policy, the “Excellent Public Schools Act,” was more controversial and was represented as divisive by the media, the bill easily passed both houses with support from an overwhelming majority of legislators.⁸¹

Opposition during states’ legislative processes comes from those who do not support a phonics-based approach, opposition to Grade 3 retention components (e.g., in North Carolina), as well as from individuals who view state reading requirements as the state overstepping and a loss of local control.⁸² Often, these policies are more partisan outside of the legislature than among legislators.

SUPPORTERS OF SCIENCE OF READING POLICY

Proponents of science of reading policies believe that embedding science of reading into legislation will improve students’ reading outcomes by ensuring evidence-based instructional practices and teacher preparation.⁸³ Accordingly, supporters of science of reading policies claim that mandates will provide consistent instruction to support fluency and comprehension.⁸⁴

Policy actors in support of science of reading policy include those involved in education research; education policy organizations, think tanks, and education professional associations (including the Education Trust, Thomas B. Fordham Institute, National Council on Teacher Quality, and National Association of Elementary School Principals, among others); supporters of phonics instruction; opponents of whole language and balanced literacy approaches; the International Dyslexia Association; and Mark Seidenberg, who wrote the (2017) book *Language at the Speed of Sight: How We Read, Why So Many Can’t, and What Can Be Done About It*.⁸⁵

While the country’s two largest teachers’ unions, the National Education Association (NEA) and the American Federation of Teachers (AFT) have not published position statements explicitly for or against the science of reading, content on each organization’s websites references reading instruction approaches heavily align with the science of reading. In a 2020 statement titled “Where we Stand: For the Love of Reading,” AFT President Randi Weingarten expresses a desire not to return to the “Reading Wars,” but

highlights that the AFT has updated and republished Moat's seminal article "Teaching Reading Is Rocket Science: What Expert Teachers of Reading Should Know and Be Able to Do," which discusses "science-based reading instruction."⁸⁶ Weingarten, and the AFT by extension, further note support for evidence-based reading practices, noting that "In disseminating effective practices grounded in research, everyone has a role to play," while acknowledging that "[t]he current state of reading research understands the importance of teacher professionalism and autonomy. Embracing the science is, fundamentally, about giving teachers the freedom to teach."⁸⁷ Additionally, the NEA's professional development resource "Reading 101: A Guide to Teaching Reading and Writing" guides educators through modules aligned to the five science of reading practices.⁸⁸

CRITICS OF SCIENCE OF READING POLICY

Opponents to science of reading policies claim the mandates are too prescriptive, phonics-heavy, costly, and removed from the classroom.⁹⁰

Alternatively, some opponents to new reading legislation oppose specific aspects of states' science of reading legislation that include Grade 3 retention policies (which is not a component of all states' science of reading policies nor a facet of the science of reading), rather than the basis of the science of reading in general.⁹¹

Encompassing many common criticisms to the science of reading, the National Education Policy Center at the University of Colorado, Boulder (NEPC) released a Policy Statement on the science of reading, noting their view that the science of reading approach distorts research and fails to support the needs of all students. Indeed, their guiding principles for reading legislation assert legislatures "[s]hould recognize that there is no settled science of reading."⁹² The NEPC's misgivings with the science of reading approach include:⁹³

- Failing to place the current concern for reading in a historical context.



"Given the well-documented contentiousness of the reading field [...] an embrace of a term like science of reading by some will only arouse opposition among others."⁸⁹

- Timothy Shanahan,
National literacy expert, former
Director of Reading at Chicago Public
Schools, and member of the National
Reading Panel

- Overemphasizing recent test scores and outlier data instead of longitudinal data with greater context (for example, NAEP).
- Misrepresenting the "science of reading" as settled science that purportedly prescribes systematic intensive phonics for all students.
- Overstating and misrepresenting the findings of the National Reading Panel report of 2000, without acknowledging credible challenges to those findings.
- Focusing blame on K-12 teachers and teacher education without credible evidence or acknowledgment of challenging teaching and learning conditions and the impact of test-based accountability policies on practice and outcomes.
- Celebrating outlier examples of policy success (in particular, the Mississippi 2019 NAEP data) without context or high-quality research evidence for those claims.

A main criticism of science of reading is by opponents who argue it focuses too narrowly and prescriptively on phonics instruction and the foundations of reading.⁹⁴ Indeed, "Those opposed to the current use of [the science of reading] term argue that it is used too narrowly [...] and that the instructional practices it promotes are overemphasized and often inappropriate."⁹⁵ Opponents feel the science of reading prioritizes phonics at the expense of teaching other components of literacy instruction, including building background knowledge, comprehension skills, and writing.⁹⁶ These individuals believe that phonics instruction should not be the main emphasis in reading instruction, and that there are multiple methods for teaching reading, such as balanced literacy approaches, that do not center on phonics.⁹⁷

Opponents to phonics and foundational literacy instruction often support methods aligned with balanced literacy instruction. Unlike the science of reading, balanced literacy supports three-cuing (i.e., using semantic, syntactic, and grapho-phonetic context clues to identify the meaning of a word) and leveled reading texts.⁹⁸ The most influential and popular balanced literacy curriculum, which has been used in schools across the country for two decades, is Lucy Calkins' Units of Study, which historically did not include explicit phonics instruction.⁹⁹ Notably, in 2020 Lucy Calkins shifted her position on balanced literacy and changed her curriculum, incorporating phonics instruction for the first time, "signal[ing] a major change in instructional theory from the organization."¹⁰⁰ The updated curriculum, however, still includes three-cueing, a hallmark of balanced literacy and in direct opposition to science of reading practices.¹⁰¹

Another perspective critics of the science of reading maintain is that the science of reading is promoted by advocacy groups and researchers too far removed from the classroom, and that instead policy should view classroom teachers, rather than researchers and policy-makers, as the experts on their students' needs.¹⁰² Accordingly, critics of the science of reading "question the value of ideas communicated by journalists and noneducators who do not know classroom instruction or who are not scholars of reading and literacy."¹⁰³ Similarly, the NEPC echoes these claims, stating in their recommendations that state and federal legislatures "Should not prioritize advocacy by a small group of non-educators over the expertise and experiences of K-12 educators and scholars of reading and literacy [... and] should acknowledge the teacher as the reading expert in the care of unique populations of students."¹⁰⁴

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