A Science of Reading Primer

What governance teams need to know

IN THIS PRIMER

- Statewide literacy data highlighting persistent achievement gaps and why early reading proficiency matters
- Key terms for word recognition and language comprehension
- A clear explanation of the science of reading and what it reveals about how students learn to read
- Alignment of California's ELA/ELD Framework with evidence-based reading research
- An overview of Multi-Tiered System of Supports for delivering effective, data-driven reading instruction
- Board policies and governance questions to support local literacy improvement efforts

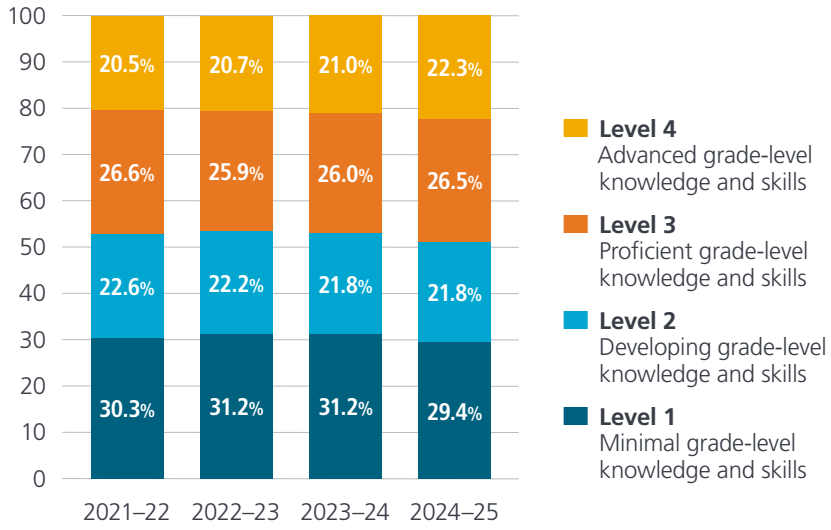
This primer provides California school board members and governance teams with an overview of the science of reading and its connection to California's English Language Arts/English Language Development (ELA/ELD) Framework. It highlights current statewide literacy data and provides practical questions boards can use to guide oversight and policy decisions. Being versed on evidenced-based reading instruction supports governance teams in making informed decisions about curriculum adoption for literacy instruction, budgets, and professional development for their local educational agency (LEA).

The state of K-12 literacy in California schools

Stagnant literacy levels

The most recent data from the California Assessment of Student Performance and Progress (CAASPP) show that fewer than half of California students are proficient at reading. As illustrated in Figure 1, only 49 percent of California's students scored Proficient or Advanced in Reading/Language Arts in the 2024–25 school year, leaving more than half of California's students not meeting grade-level standards. These proficiency levels have remained relatively unchanged over the past decade, which has led to calls from the public for California schools to prioritize reading instruction.

Figure 1: 2025 CAASPP Results for English Language Arts



Source: California Department of Education (2025)

The results are even more troubling when the data is disaggregated for historically underserved student groups. According to a 2025 EdSource analysis, an overwhelming gap exists between California's African American, American Indian, Hispanic, and Pacific Islander students and their white and Asian peers. As noted in Figure 2, 74 percent of Asian and 62 percent of white students met or exceeded standards, compared to 39 percent of Hispanic and 33 percent of African American students. Similarly, CAASPP results broken down by socioeconomic status (SES) reveal that only 38 percent of economically disadvantaged students reached proficiency in Reading/Language Arts, compared to 68 percent of their non-disadvantaged peers (Figure 3). CSBA is calling upon the state to do more to accelerate student achievement and close these persistent achievement gaps.

Why it matters

Literacy is the ability to read and write and is the foundation for every aspect of learning in school and long-term success in life. When students do not develop strong reading skills by the end of third grade, they face higher risks of academic struggle, disengagement, and limited opportunities throughout their schooling, and even upon graduation. Yet the data tell a sobering story: According to a recent analysis by the National Center for Education Statistics, one in four young adults ages 16 to 24 in the United States are functionally illiterate, even though most have graduated from high school. These persistent gaps in literacy outcomes reflect systemic barriers that must be addressed early and equitably by schools, which can be accomplished by focusing on efforts to improve literacy in the state's TK-12 schools.

In recognition of this reading crisis, the NAACP passed two resolutions in 2024, declaring literacy a civil right and calling on states, districts, and teacher preparation programs to ensure that all students, particularly African American students and other historically underserved populations, receive evidence-based reading instruction. Building on this national call to action, California has recently prioritized legislation to address these disparities and improve reading outcomes, including through Senate Bill 114 (2023, Screening for Risk of Reading Difficulties, including dyslexia) and Assembly Bill 1454, commonly referred to as the "Science of Reading" bill, which passed in October 2025.

What is the science of reading?

The science of reading (SOR) is a general term that refers to the comprehensive body of research on how students learn to read. Its purpose is to understand how students learn to read, why some students struggle, and how school systems can help all students become stronger readers.

- SOR is **not** a curriculum.
- SOR is **not** a philosophy.
- SOR is **not** a singular approach to teaching reading.

Figure 2: 2025 CAASPP Results by Race and Ethnicity

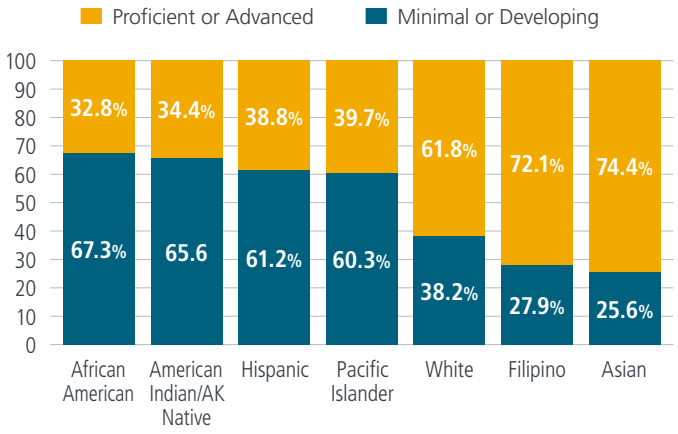
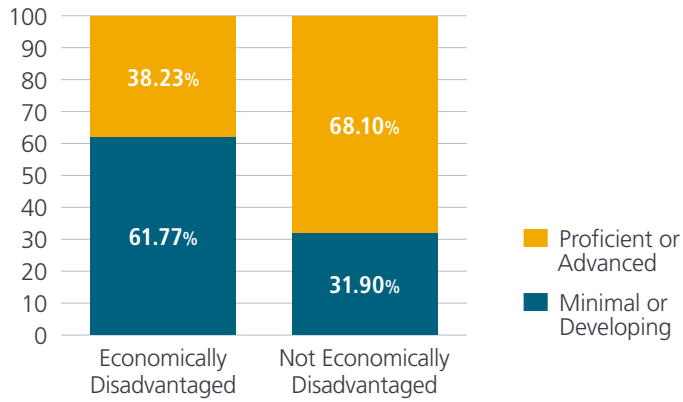


Figure 3: 2025 CAASPP Results by Socioeconomic Status



Source: EdSource (2025)

Key terms for word recognition

- **Decoding (Phonics):** Using knowledge of letter-sound relationships to accurately sound out and read unfamiliar words.
- **Phonological awareness:** Ability to hear, recognize, and work with individual sounds and sound patterns in spoken words.
- **Sight word recognition:** Instantly identifying familiar words by memory, built through repeated exposure and practice.

Source: Scarborough, 2001

More specifically, SOR focuses on how skilled reading develops from two key processes: **word recognition** and **language comprehension**. One common framework to help visualize this process is known as the Simple View of Reading, developed by Philip Gough and William Tunmer in 1986. The following section provides information about word recognition and language comprehension so that governance teams can engage in informed discussions with LEA staff.

Figure 4: The Simple View of Reading

Source: Gough & Tunmer, 1986

Word recognition

Before children can truly understand what they read, they first need to accurately read the written word off the page. This process of teaching children to correctly read words typically begins in kindergarten, when teachers help students learn how letters and sounds work together. This is commonly referred to as phonics instruction, or decoding. But phonics instruction is only one aspect of learning to read. As students are learning how to accurately decode new words, they must also be able to map these sounds onto the sounds of spoken language, a process known as phonological awareness. And as the words encountered in text become longer and more complex in their spelling patterns, students require massive amounts of practice to ultimately be able to read a text quickly, smoothly, and with expression.

These word recognition competencies, often referred to as "foundational reading skills," do not come naturally to children and must be taught to mastery by teachers using instructional approaches that are systematic and explicit. **Systematic instruction** refers to teaching these skills in a logical, sequential order, building from basic to complex concepts; **explicit instruction** means directly teaching and modeling these skills, so students have no doubt what to do. Together, these methods create a structured literacy approach that is highly effective for all students, especially those who struggle with learning how to read.

Word recognition in action

Take the following sentence as an example: "**The dog ran up the hill.**" As the student reads the sentence, they instantly recognize the word "the" without needing to sound it out. This is an example of **sight word recognition**. When the student comes to the unfamiliar word "ran," they apply letter-sound relationships to sound it out, using **decoding** skills to make the connection between written letters and spoken sounds. As they arrive at the final word "hill," the student uses their **phonological awareness** skills to know that, despite its four letters, this word only contains 3 sounds (or phonemes) in spoken language: /h/ /i/ /l/.

Key terms for language comprehension

- **Vocabulary:** Learning new words, what they mean, and how to use them naturally in speaking and writing.
- **Background knowledge:** Making sense of the written word by connecting it to one's own experiences, what's happening in the world, and other areas of knowledge.
- **Language structures:** Understanding how the order and arrangement of words in a sentence shape its meaning, also referred to as syntax.
- **Verbal reasoning:** Thinking deeply about a text by analyzing, predicting, and drawing conclusions using clues from what has been read.
- **Literacy knowledge:** Recognizing how print works and understanding different types of texts, like stories, articles, and poems, and the features that make each unique.

Source: Scarborough, 2001

Language comprehension

Learning to decode words is just the first step to becoming a skilled reader. As students acquire the ability to decode the written word, they must also learn how to make meaning of individual words, how these words come together to represent an idea in a sentence, and how these ideas come together to form a coherent message in a text. Unlike word recognition, which can be taught to mastery, the skills required for language comprehension are more complex and highly dependent on the structure of a particular text, a student's background knowledge on the topic, and their ability to monitor their comprehension as they are reading.

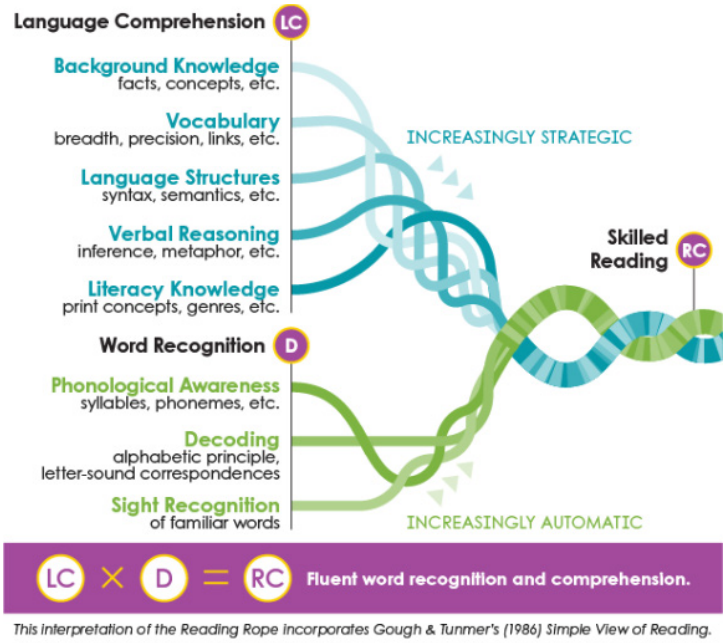
Language comprehension in action

Take for example the following sentence: "**When water vapor in the air cools and changes into liquid droplets, it forms clouds in the sky.**" Students need to understand science-specific **vocabulary** like vapor, droplets, and condenses to comprehend the process of cloud formation described in the sentence. They also connect this new information to what they already know (**background knowledge**), perhaps recalling how they've seen clouds form after a rainy day or steam rise from a boiling pot. Students notice how the sentence uses a cause-and-effect **language structure**, which helps them grasp that cooling causes condensation, not the other way around. Upon finishing the sentence, students might also tap into their **verbal reasoning** skills to try to predict what might happen if the air were to warm back up: evaporation. Recognizing that this sentence comes from an informational science text, not a story, allows students to leverage their **literacy knowledge**, and know to look for text features like diagrams or captions that support comprehension.

Scarborough's Reading Rope

A more detailed image often used to describe how reading works is called the Reading Rope. Created by reading expert Hollis Scarborough, the Reading Rope shows how the two key processes described above, word recognition (D in the Reading Rope visualization) and language comprehension (LC), come together in the brain. Like the strands of a rope twisting together, these skills strengthen each other until reading becomes smooth and effortless, or fluent. When a rope is strong, one doesn't think about how it's made; they just use it. It's the same with skilled reading: over time, a proficient reader stops thinking about the skills that allow them to automatically recognize written words and can simply focus on what they're reading and on making sense of the text.

Figure 5: Scarborough's Reading Rope



Source: Really Great Reading, 2025

California's approach to the science of reading

The SOR is reflected in California's model for reading instruction, detailed in the California Department of Education's (CDE) ELA/ELD Framework for California Public Schools (2014). The state's integrated approach to teaching literacy is similar to the Simple View of Reading and Scarborough's Reading Rope; however, it is organized around five cross-cutting themes that are designed to provide a structure for supporting all learners, especially English learners, in becoming proficient readers and writers.

Those five themes are:

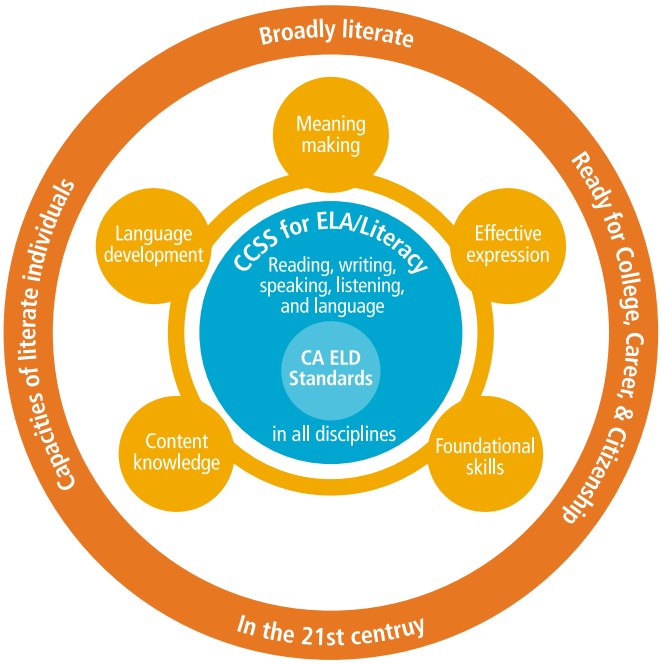
- Meaning making
- Language development
- Effective expression
- Content knowledge
- Foundational skills

These five key themes of the ELA/ELD Framework map neatly onto the strands of Scarborough's Reading Rope (Figure 6). Foundational skills correspond to the lower rope of phonological awareness, decoding, and word recognition. Meaning making, language development, content knowledge, and effective expression strengthen the upper rope of language comprehension.

Viewed through the lens of the science of reading, this framework underscores that fluent reading depends on sturdy word-level skills, rich language, and conceptual knowledge. In essence, the California ELA/ELD Framework's cross-cutting themes provide a roadmap for weaving together evidence-based literacy instruction and language development that echo the dual strands of reading in Scarborough's model and fit within the Simple View of Reading model.

A key distinction between the California approach to literacy development and the broader SOR approach is revealed in how the five key themes are intentionally nested within two broader outer layers: **contexts** and **conditions for learning**. The outer layers of this framework (Figure 6) remind educators that literacy does not develop in isolation; it grows within meaningful, culturally and linguistically responsive contexts and supportive classroom conditions. The white field beyond the five cross-cutting themes represents the ideal learning environment for language and literacy instruction: one that is **integrated, motivating, engaging, respectful**, and **intellectually challenging** for every student. The outer, golden ring holding the framework together represents the ultimate goals of ELA instruction — to ensure that by graduation, California students are prepared for college, career, and civic life, and possess the broad literacy and skills needed for lifelong learning. Together, these themes and outer layers underscore California's holistic approach: one that blends the rigor of the science of reading with culturally and linguistically responsive instruction.

Figure 6: ELA/ELD Framework for California's Public Schools



California Department of Education, 2025

Multi-Tiered System of Supports (MTSS)

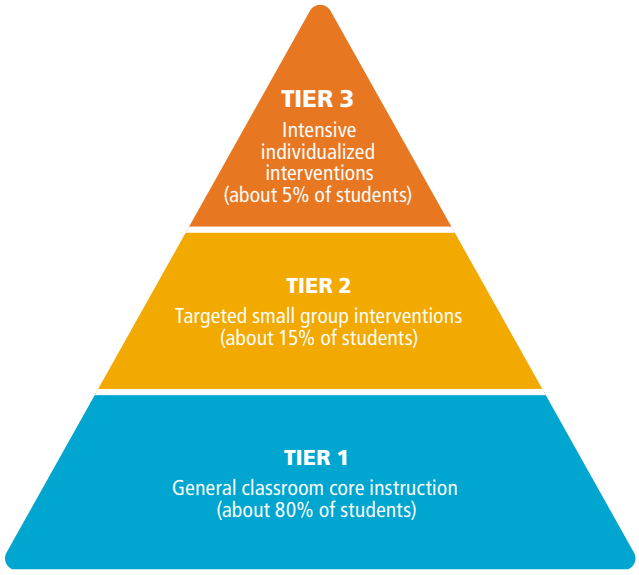
The SOR is implemented within a Multi-Tiered System of Supports (MTSS) framework, which organizes reading instruction into three tiers:

- Tier 1: General classroom core instruction for all students
- Tier 2: Targeted, small-group intervention for students needing extra support
- Tier 3: Intensive, individualized instruction for those with significant needs

MTSS provides a coherent set of structures for LEAs to improve reading outcomes through early identification, strong initial instruction, and targeted intervention. Using universal screening data required by Education Code Section 53008 (as added by SB 114, 2023) in addition to more specific diagnostic assessments, LEA and site-level teams analyze data to identify patterns of need across schools to ensure that student reading support is responsive across multiple levels of instruction.

LEAs can integrate MTSS implementation milestones and progress indicators into their Local Control and Accountability Plan (LCAP) goals to ensure transparency around how data-driven reading supports are improving outcomes across tiers. Through this data-driven process, schools design tiers of support tailored to individual learners while also evaluating their own instructional and staffing resources to ensure those needs are met. Rather than adding new initiatives, MTSS focuses on aligning and strengthening what works, abandoning ineffective practices, and prioritizing proven, evidence-based instruction for every student. For additional information about literacy support in MTSS, see MTSS for Literacy.

Figure 7: Multi-Tiered System of Supports for Literacy Pyramid



Source: Reading Rockets, 2025

Policy and governance recommendations for improving literacy

The following are policy recommendations for governance teams to consider to improve students' literacy and learning.

1) **Prioritize literacy in the LCAP.** Embed measurable literacy goals, metrics, and actions within each LEA's LCAP, ensuring that resources and interventions directly address early reading proficiency and the needs of historically underserved student groups.
2) **Allocate resources based on demonstrated student need.** Direct additional funds, such as Title I, Title II, funding for afterschool and summer school enrichment programs, and Literacy Coaches and Reading Specialists (LCRS) grants, to schools with the highest percentages of students reading below grade level, ensuring that those students receive evidence-based interventions and experienced literacy educators.
3) **Ensure access to high-quality, evidence-based materials and professional learning.** Adopt instructional materials, interventions, and assessments aligned with the science of reading and the California ELA/ELD Framework. Provide ongoing professional learning and coaching to ensure fidelity of implementation across all tiers of instruction. Note: The State Board of Education will complete a follow-up adoption of ELA/ELD instructional materials for grades TK-8 in November 2026, which will provide additional options that reflect advances in literacy research and instructional pedagogy.
4) **Avoid fragmented or unproven initiatives.** Refrain from adopting reading programs, practices, or assessments not grounded in research or unaligned with state guidance. Instead, integrate literacy improvement efforts within existing MTSS structures to ensure coherence and sustainability.
5) **Prioritize early intervention.** Implement screening for reading difficulties, follow-up diagnostic assessments, and parent education and engagement on literacy practices and habits. Early intervention in grades TK-2 can prevent more severe reading challenges as well as improve academic performance and help mitigate behavior problems.

Key questions for governance teams to consider

Governance teams can use the following questions when assessing and evaluating their literacy practices, resources, and assessments.

Assessment data

- What does CAASPP data reveal about student proficiency in ELA/Literacy across our LEA?
  - » At specific school sites?
  - » At individual grade levels?
  - » For historically underperforming student groups?
  - » What is our LEA's plan to improve proficiency across school sites, grade levels, and with underperforming student groups?
- What do our LEA's Universal Screening results reveal about students at risk for reading difficulties?
- What are the proficiency rates for each student group on both the CAASPP and Universal Screening assessments?
  - » If gaps are present, how is this being addressed in the LCAP?

Professional development

- What professional development has our LEA's educators received in evidence-based literacy practices aligned with the science of reading? Consider classroom teachers, interventionists, paraprofessionals, and administrators.
- What follow-up professional development is in place to provide ongoing coaching, collaboration, and data review so that teachers can apply what they learned from professional development to strengthen reading instruction?

Multi-Tiered System of Supports

- What processes and criteria does our LEA use to move students between tiers?
- How frequently does our LEA review progress-monitoring data to ensure timely decisions for intensifying or scaling back reading support?
- How are our LEA's LCAP goals, metrics, and expenditures aligned with improving literacy outcomes and implementing the science of reading within the MTSS framework?

Reading instruction

- How are our LEA's Tier 1 instructional materials aligned with the science of reading and the California ELA/ELD Framework?
- How are our LEA's Tier 2 and Tier 3 intervention materials aligned with the SOR and the California ELA/ELD Framework?

Board policies and administrative regulations

CSBA GAMUT Policy and Policy *Plus* subscribers have access to the most up-to-date CSBA sample policy language. The following are sample board policies (BP) and administrative regulations (AR) that have been developed as samples for LEAs to use in adopting their own policies for literacy instruction.

BP 0460 – Local Control and Accountability Plan
BP 6011 – Academic Standards
BP 6141 – Curriculum Development and Evaluation
BP 6142.91 – Reading/Language Arts Instruction
BP 6161.1 – Selection and Evaluation of Instructional Materials
BP 6161.11 – Supplemental Instructional Materials
BP 6174 – Education for English Learners

CSBA resources

- MTSS for literacy
- CA literacy landscape
- CSBA webinar: CSBA covers CAASPP results and advocates for comprehensive state-level plan to increase support for LEAs in their work to close achievement gap.
- CSBA blog: CSBA's Research and Education Policy Development (REPD) team give an overview of CAASPP results for English language arts (ELA) and math results.

Additional resources

Below are state and federal resources to support literacy instruction.

- California ELA/ELD Framework (2014): Comprehensive guidance on implementing evidence-based literacy instruction aligned with California's content standards.
- California Literacy: CDE's webpage with guidance and resources for teachers and families in preschool through 12th (P–12) grade schools regarding evidence-based literacy instruction. Includes Literacy Roadmap, screening for learning difficulties information, and resources.
- California Collaborative for Educational Excellence (CCEE): Offers professional learning networks and tools for implementing evidence-based literacy systems under MTSS.
- National Center on Improving Literacy (NCIL): Federally funded center offering resources on evidence-based literacy instruction, early screening, and supports for struggling readers.
- The Reading League: National nonprofit organization dedicated to advancing the science of reading through research, professional learning, and public awareness.

George Ellis serves as the director of the California Reading and Literature Project (CRLP) at the University of California, Berkeley. He provides leadership in advancing evidence-based literacy instruction and professional learning for educators across the state. Ellis also teaches in the Berkeley Teacher Education Program (BTEP), with an emphasis on research-informed approaches to supporting the language and literacy development of multilingual learners.