

# The Miracle of Reading

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Solution Tree



## **Of the many skills that children acquire throughout their development, perhaps nothing is as transformative as learning to read.**

Reading introduces children to the worlds of Hogwarts and Narnia, bathes them in the lyrical richness of poetry, and opens a world of information about animal life, Minecraft, or sports trivia. The path to lifelong literacy begins at home but is cemented in early schooling. For too many children, however, this process is unnecessarily difficult, triggering a cycle of struggles which is difficult to break. Students who do not read proficiently by the end of third grade experience higher rates of school dropout, which decreases their life earning potential (Annie E. Casey, 2010).

Though we have long known the essential components for effective literacy instruction, they are not yet commonplace in schools nationwide. Subsequently, reading scores on the National Assessment of Educational Progress (NAEP) for fourth- and eighth-graders have stagnated over the past three decades; nationally, 39% of our public school students scored below basic in literacy. We are at an opportune moment in our nation's literacy landscape, ripe with conversation in popular press, documentary films, and even state legislatures. With so many voices coming to the table around literacy, it is imperative to be accurate in terminology. Let's begin by exploring an often misunderstood phrase "the science of reading."







## Clarifying the Science of Reading

The miraculous process of learning to read is the focus of the science of reading—a long-standing body of interdisciplinary research that examines the multifaceted nature of reading development (The Reading League, 2021). Though the amount of public attention and media coverage is at an all-time high, the science of reading is not, in fact, a phase, trend, or pendulum swing. In fact, the efforts of cognitive psychologists, neuroscientists, and additional reading researchers are over five decades in the making.

Furthermore, the science of reading explores many components that come together in order for readers both to recognize words and the meaning behind print. Too often, the science of reading is misrepresented as narrowly focused on phonics and decoding.

The science of reading also reminds us that reading is a relatively recent human-made invention. While spoken language has existed for approximately 6 million years, reading and writing only evolved around 6000 years ago. Thus, while oral language is natural and innate (not requiring explicit instruction), reading is not. To attain the skill of reading, the human brain must build neural pathways between various locations. The reading brain is not one clear location in the brain structure, but rather a series of neural pathways that connect, activate, and strengthen as we learn to read. The visual cortex helps us recognize letters and words, while the phonological cortex assists in connecting the sounds to those letters. Equally involved are the semantic cortex, which connects words and their meanings, and the syntactic cortex, contributing to understandings of sentence structure.



## The Multifaceted Nature of Reading

The body of research known as the science of reading highlights that reading is a multifaceted process. We read in order to comprehend or construct meaning. One of the most robust theories posited is that two constructs must be in place to make meaning of text: (1) word identification, or the ability to lift words off the page, and (2) language comprehension, or the ability to understand the language behind the words (Gough & Tunmer, 1986). When readers struggle in either one of these areas, their overall understanding of text suffers.

Much of the focus of the current conversations around the science of reading have focused on the skills of phonics and decoding—what Gough and Tunmer (1986) note as word recognition. Here, readers instantly retrieve familiar words or apply letter-sound knowledge to decode unfamiliar words. However, equally important are the multiple factors that influence language comprehension, as depicted in Hollis Scarborough's (2001) reading rope. Each of the rope strands contain subskills. Individual strands intertwine, making reading automatic and fluent, so we can devote cognitive energy to comprehension. The strength of the rope as a whole relies on the strength of each individual strand.





## Applying the Science of Reading Across Grade Levels

As a body of research, the science of reading has much to offer teachers and school leaders of all grade levels and content areas. Further, it does not pertain solely to monolingual students or to early childhood classrooms. At the elementary level, science of reading aligned instruction provides students a solid foundation in the skills of phonological awareness (understanding the sound structure of language), as well as phonics and decoding so that students develop fluent word recognition skills. These foundational skills must be delivered with a clear instructional scope and sequence, teacher-facilitated instruction that leaves nothing to chance, and a multisensory process integrating letter sounds, letter formation, and letter names. Through this explicit instruction, most students by the end of grade two can master the majority of phonics patterns.

Students in upper elementary grades focus on how the origin, derivation, and meaning of a word influences its spelling. We must provide students with opportunities to connect phonics to decodable

text, as well as then spell those words to cement the encoding process. Just as we focus on word identification in elementary classrooms, so must we build language comprehension skills. As we build students' background knowledge and exposure to sophisticated vocabulary through read alouds, text sets, and content-rich literacy instruction, we increase their overarching comprehension.

The SOR is not limited to instruction in elementary schools; though they may focus less on word identification skills, secondary teachers build language comprehension through content areas. In middle school and high school classrooms, comprehension support is even more essential. A seventh grade science teacher might explore how the prefix *bio-* unlocks words related to the study of life. A high school social studies teacher might lead students in creating semantic maps of Civil Rights leaders. All levels of secondary teachers must commit to explicit instruction of academic language, which may include the higher level words not often heard in conversation, as well as words that signal text structures and relationships between ideas (Lee, 2023).





## Translating the Science of Reading for All Teachers

With so much attention on literacy instruction, we must harness the momentum and translate the energy into action. We must also embrace a mindset of patience, stamina, and diligence, knowing that transforming literacy practices will not be an immediate victory. When all teachers and school leaders understand the research-based findings in the science of reading, receive meaningful professional learning, and adopt high-quality instructional materials, we have the opportunity to significantly alter our nation's literacy landscape.





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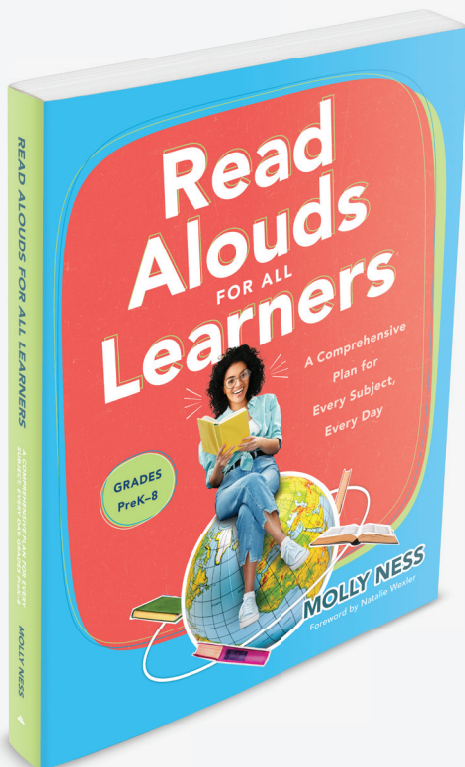




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