

The Science of Reading: Talking Points and Supporting Research



The Science of Reading – What’s the Difference?

The *Science of Reading* is the body of scientific research conducted over the last several decades that demonstrates how the brain becomes proficient with language and proves which instructional practices are the most effective for developing strong readers and writers. There are several key differences between practices from previous reading movements and the *Science of Reading* research consensus.

| Ineffective Practices During the Eras of Reading First and Balanced Literacy | Best Practices Based on the <i>Science of Reading</i> |
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| Using pictures and other clues to guess words instead of decoding them; a practice known as three-cueing | Teaching phonics explicitly and systematically with a clear scope and sequence and without three-cueing |
| Memorizing lists of whole high-frequency words (often referred to as “sight” words) | Mapping the sound-spelling patterns of high-frequency words to make them easier for students to remember and transfer to similar words |
| Restricting students to leveled texts with limited knowledge and vocabulary for comprehension and content instruction | Using complex grade-level texts for comprehension and content instruction with supports to give all students access |
| Treating comprehension like a skill and focusing on extensive instruction of isolated strategies with simple texts | Intentionally building knowledge and practicing strategies in the context of rich grade-level texts |
| Teaching vocabulary words in isolation only | Teaching vocabulary both out-of-context and in the context of rich grade-level texts |
| Separating writing instruction from reading instruction | Integrating writing as a learning tool to master decoding skills and to synthesize and communicate comprehension of topics and texts |

Research Consensus by Topic with Links to Supporting Documents



SCAN FOR LINKS

Phonological and Phonemic Awareness

Phonological awareness is an umbrella term that means an awareness of the sounds in spoken words, including syllabication, rhyming, segmentation, and blending of individual sounds (phonemes). Phonemic awareness is an awareness of the individual sounds (phonemes) in spoken words.

Phonemic awareness is an important predictor of future reading success, plays a critical role in accurate and automatic word reading, and is the foundation for phonics, fluency, and spelling.

- [Kilpatrick – How we Remember Words and Why Some Children Don't](#)
- [Teaching Phoneme Awareness in 2022: A Guide for Educators](#)
- [Meeting the Challenges of Early Literacy Phonics Instruction](#)

Phonemic awareness instruction should be explicit (direct), systematic (from easier skills to harder ones in a cumulative review cycle), data driven, and should follow a scope and sequence.

- [What's Settled About the Science of Reading?](#)
- [National Reading Panel Report](#)
- [Teaching Phoneme Awareness in 2022: A Guide for Educators](#)

Phonics

Phonics is the relationship between the individual sounds (phonemes) in written language and their corresponding spelling patterns (graphemes).

Phonics instruction should be explicit (direct), systematic (from easiest skills through advanced in a teach/practice/review cycle that achieves mastery), data driven, and should follow a scope and sequence that includes all the major skills (no gaps).

- [What's Settled About the Science of Reading?](#)
- [National Reading Panel Report](#)
- [Meeting the Challenges of Early Literacy Phonics Instruction](#)

Three-cueing (guessing words based on pictures and other clues) should not be taught or encouraged because it causes students to rely on clues other than phonics patterns, which prevents the formation of brain connections that make orthographic mapping (process used by skilled readers) possible.

- [At a Loss for Words: How a Flawed Idea is Teaching Millions of Kids to be Poor Readers](#)
- [Orthographic Mapping: Cracking the ABC Code](#)
- [How the Brain Learns to Read \(min. 3:28-15:38\)](#)
- [Kilpatrick – How we Remember Words and Why Some Children Don't](#)

Both irregularly and regularly spelled high-frequency words should be taught by mapping sound-spelling patterns as much as possible, not memorizing whole words. Memorizing whole words uses visual memory, which takes much more effort, stores the words in a different part of the brain that isn't as easily accessible, and doesn't make the orthographic connections that allow students to transfer the sound-spelling patterns to other similar words.

- [New Brain Study Sheds Light on How Best to Teach Reading](#)
 - [Stanford Study on Brain Waves Shows How Different Teaching Methods Affect Reading Development](#)
 - [How the Brain Learns to Read \(min. 3:28-15:38\)](#)
 - [Kilpatrick – How we Remember Words and Why Some Children Don't](#)
 - [Understanding and Teaching Reading Fluency in Your Classroom](#)
 - [Teach Sight Words as You Would Other Words](#)
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Fluency

Fluency is reading accurately (accuracy) at a conversational pace (automaticity) with appropriate expression (prosody).

Fluency is an important component of comprehension because it frees up working memory so readers can focus on meaning. Instruction progresses from the letter and word level to connected grade-level texts and should include modeling (preferably with human vs. tech voice), repeated readings, and progress monitoring.

- [National Reading Panel Report](#)
 - [Understanding and Teaching Reading Fluency in Your Classroom](#)
 - [The Complex Nature of Reading Fluency – A Multidimensional Approach](#)
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The most effective fluency practice strategies include choral reading, echo reading, and partner reading.

- [National Reading Panel Report](#)
 - [Developing Fluent Readers](#)
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Once students have mastered decoding, fluency instruction is most effective with grade-level texts.

- [What Texts to Use to Teach Fluency](#)
 - [Teaching Oral Reading Fluency to Older Students](#)
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Vocabulary

Vocabulary is the knowledge of words and word meanings required to understand and communicate effectively when listening, speaking, reading, and writing.

Most words are learned indirectly through read-alouds, discussions, and a wide volume of reading. All the methods for building knowledge also build vocabulary.

- [What's Settled About the Science of Reading?](#)
 - [Effective Vocabulary Instruction](#)
 - [Teaching Vocabulary](#)
 - [Job One: Build Knowledge](#)
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It takes repetition and multiple exposures for students to “own” a word (learn it to the point that they add it to their speaking and writing lexicon).

- [Words are Learned Incrementally Over Multiple Exposures](#)
 - [Effective Vocabulary Instruction](#)
 - [Teaching Vocabulary](#)
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Students need to learn 2,000-3,000 words a year, so it is crucial to teach vocabulary both directly (out-of-context) and in the context of reading, discussing, and writing about complex, grade-level texts.

- [The Influence of Vocabulary on Reading Acquisition](#)
 - [Teaching Vocabulary](#)
 - [Effective Vocabulary Instruction](#)
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Since we can only directly teach about 200-300 words a year, it is imperative to choose words that are not well-known to students, are encountered across multiple academic domains, are part of a word family, are abstract, or have multiple meanings.

- [Effective Vocabulary Instruction](#)
 - [Choosing Words to Teach](#)
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Comprehension

Reading comprehension is the ability to make meaning from text.

It is settled science that background knowledge of words and the world is the single largest driver of reading comprehension, but activating prior knowledge only benefits students who have it (typically those with higher SES). We must start building knowledge the moment students enter school and cannot afford to wait until they can decode independently. This is accomplished through interactive read-alouds in the primary grades. Reading multiple texts about one topic (text sets) builds knowledge and vocabulary four times faster than other methods.

- [What's Settled About the Science of Reading?](#)
 - [Knowledge at the Center of English Language Arts Instruction](#)
 - [Effect of Prior Knowledge on Good and Poor Readers' Memory of Text](#)
 - [Reading Comprehension Requires Knowledge—Of Words and the World](#)
 - [Job One: Build Knowledge](#)
 - [Building Knowledge—What an Elementary Curriculum Should Do](#)
 - [Reading to Learn from the Start](#)
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Explicit comprehension strategy instruction is effective, but only up to six lessons. Beyond that, it's best to teach and practice comprehension strategies in the context of atexts, using text evidence and allowing the demands of the text to guide instruction.

- [The Usefulness of Brief Instruction in Comprehension Strategies](#)
 - [Don't Spend Excessive Time Teaching Formal Comprehension Skills – p. 22](#)
 - [Rethinking How to Promote Reading Comprehension](#)
 - [Building Knowledge: The Case for Bringing Content Into the Language Arts Block](#)
 - [The Opportunity Myth](#)
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Using a scaffolded analytical reading routine that involves repeated reading of challenging text with text-dependent questions and other supports to give all students access improves fluency, vocabulary, and comprehension at the same time.

- [Why Children Should be Taught to Read With More Challenging Texts](#)
 - [How Close is Close Reading?](#)
 - [What's Settled About the Science of Reading?](#)
 - [Knowledge at the Center of English Language Arts Instruction](#)
 - [Taking the Complexity Out of Teaching With Complex Texts](#)
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Leveled texts should not be used for comprehension or content instruction. The idea of independent, instructional and frustration-level text is based on a study that was not completed properly and has been debunked many times. Students learn more from complex grade-level texts combined with lots of instructional support to give all students access.

- [Limiting Children to Books They Can Already Read – Why it Reduces Their Opportunity to Learn](#)
 - [New Evidence on Teaching Reading at Frustration Levels](#)
 - [What Does the Easter Bunny Have in Common With the Independent Reading Level?](#)
 - [What's Settled About the Science of Reading?](#)
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Writing

Writing is communicating thoughts and ideas using written language.

Writing to synthesize and communicate students' understanding of complex grade-level texts using text evidence, enhances comprehension of both literary and informational text.

- [Writing to Read: Evidence for How Writing Can Improve Reading](#)

Writing about grade-level social studies, science, and math topics promotes students' learning of the material and builds their academic vocabulary.

- [Writing to Read: Evidence for How Writing Can Improve Reading](#)

Foundational writing skills are important predictors of future academic success.

- [Early Skills and Predictors of Academic Success](#)
- [Promoting Preschoolers' Emergent Writing Skills](#)

Explicitly teaching the writing process, organizational structures, and foundational skills of writing in the context of reading, comprehension, and content instruction will improve decoding, fluency, and comprehension.

- [Teaching Elementary School Students to be Effective Writers](#)
 - [Teaching Writing to Improve Reading Skills](#)
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