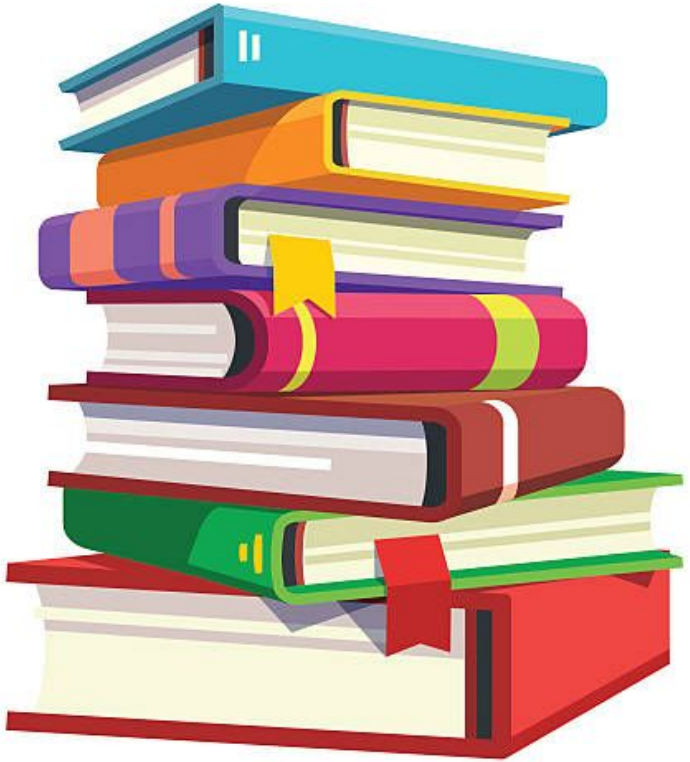
Science of Reading Overview

Dr. Kim Buechler
Learning Specialist

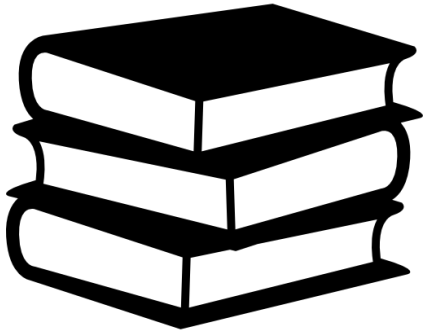


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Science of Reading Defined

The science of reading is a vast, interdisciplinary body of scientifically-based research about reading and issues related to reading and writing.



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Science of Reading Defined



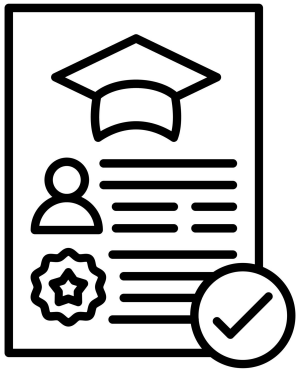
This research has been conducted over the last five decades across the world, and it is derived from thousands of studies conducted in multiple languages.

Culminated in a preponderance of evidence to inform:

- how proficient reading develops
- why some have difficulty
- how we can most effectively assess and teach

University of Florida Literacy Institute (2021)

Fields of Study Included



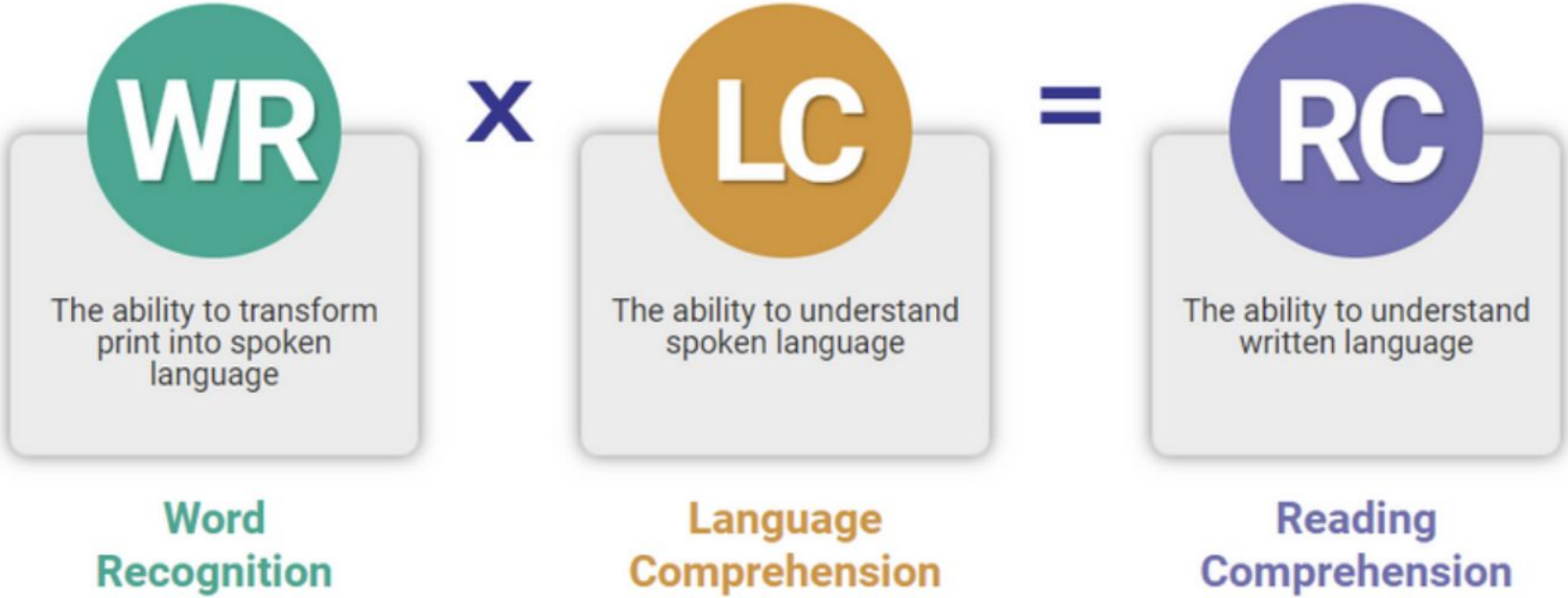
- Cognitive psychology
- Communication sciences
- Developmental psychology
- Educational research
- Special Education
- Linguistics
- Neuroscience
- School psychology

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The Simple View Formula



The Simple View of Reading (Gough & Tunmer, 1986)

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THE MANY STRANDS THAT ARE WOVEN INTO SKILLED READING

LANGUAGE COMPREHENSION

BACKGROUND KNOWLEDGE
(facts, concepts, etc.)

VOCABULARY
(breadth, precision, links, etc.)

LANGUAGE STRUCTURES
(syntax, semantics, etc.)

VERBAL REASONING
(inference, metaphor, etc.)

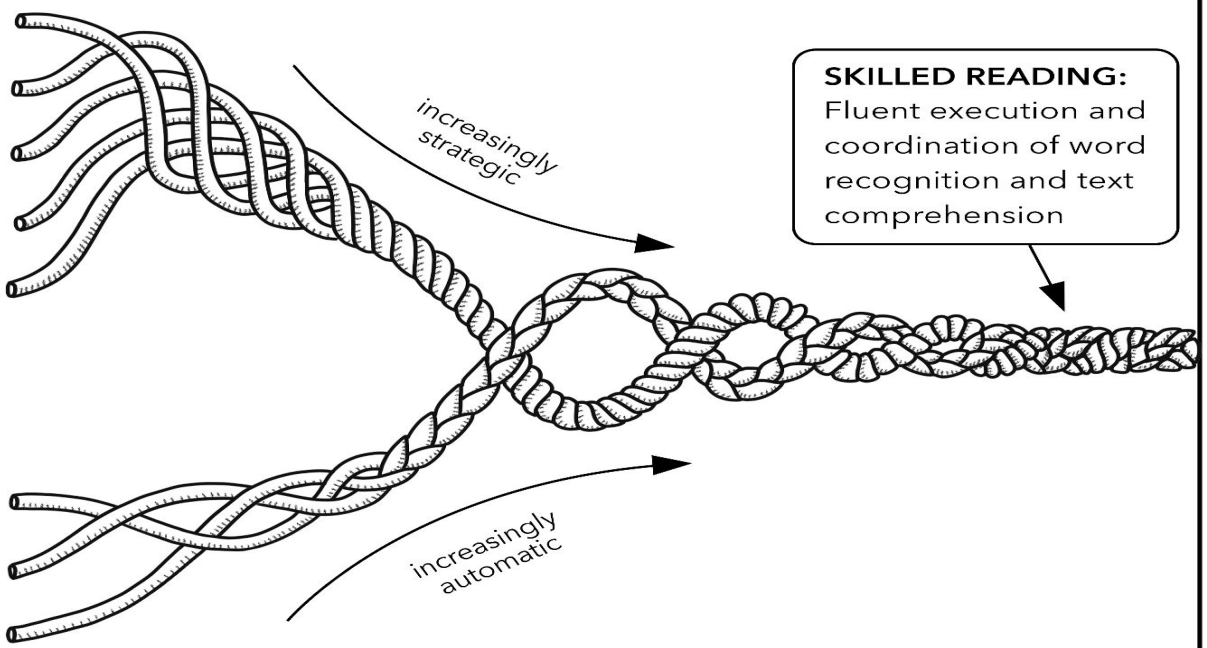
LITERACY KNOWLEDGE
(print concepts, genres, etc.)

WORD RECOGNITION

PHONOLOGICAL AWARENESS
(syllables, phonemes, etc.)

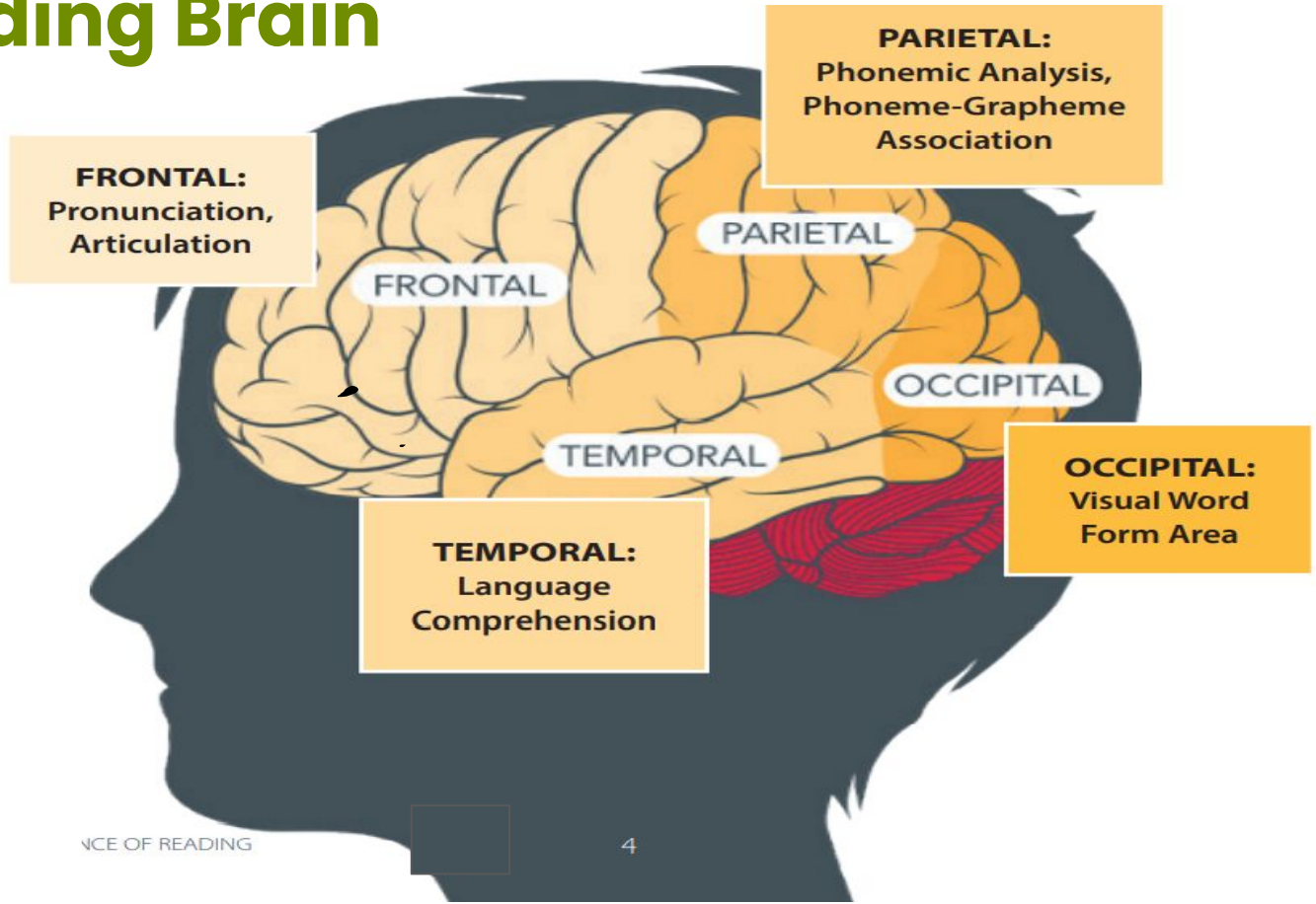
DECODING (alphabetic principle, spelling-sound correspondences)

SIGHT RECOGNITION
(of familiar words)



Scarborough (2001)

The Reading Brain



bat

Hill Learning Center (2023)

Changes in How We Teach Reading



- Phonological Instruction
- Letter/Sound Association Instruction
- Explicit, Systematic Instruction (especially in phonics
- Syllable Instruction
- Comprehension is an end result, not a strategy
- Morphological Analysis
- Semantic & Syntax Instruction
- Move from simple to complex
- Small group instruction based on skill, not level
- Decodable text used for phonics practice

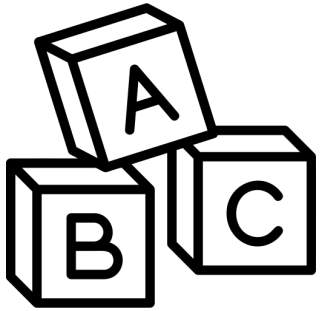
Phonological Awareness



Phonological Awareness is the awareness and manipulation of the parts of spoken language: words, syllables, onsets/rimes, and phonemes

Phoneme blending and segmenting are the most critical phonological skills

Phonics & Decoding



Phonics is a method of teaching reading and spelling that emphasizes the relationship between sounds (phonemes) and their corresponding letter combinations (graphemes) in written language.

It involves teaching individuals to associate the sounds of language with letters or groups of letters, enabling them to decode words and recognize the relationships between sounds and symbols

Sight Recognition



This skill is particularly important for building reading fluency, as it allows readers to navigate through text more efficiently and focus on comprehension rather than spending time decoding individual words.

Multisyllabic Word Reading



syllabication is the division of a multisyllabic word into separate syllables with each syllable containing one vowel sound

a syllable may contain more than one vowel letter, but the letters will represent only one vowel sound

Morphology



Morphology is the study of words,
how they are formed,
and how they relate to other words in the same language

It analyzes the structure of words and parts of words such as base words, root words, prefixes, and suffixes.

Fluency



*Fluency is needed to open up the brain's capacity to think about what it is reading
*Fluency is accurate reading of connected text at a conversational rate with appropriate prosody, or expression
*Fluency is the bridge between decoding and comprehension

Background Knowledge



Background knowledge refers to all of the information and understanding that students already have that will help them gain deep meaning from whatever text they are reading.

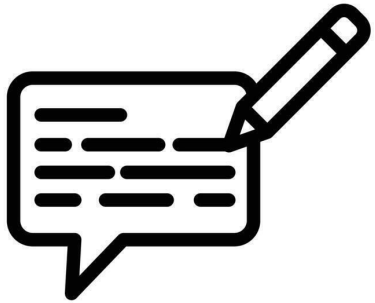
Vocabulary



Vocabulary is the knowledge of words and word meanings.

- Vocabulary strand refers to the quantity and quality of a student's known words.
- To comprehend challenging texts, students need a wealth of vocabulary knowledge.
- Simply put, when students know more words, they can comprehend more of what they read.

Language Structures



Refers to semantics—how word choice develops meaning—and syntax, the grammatical rules of a language

The language structures used in writing often differ from how we speak, so building a strong knowledge of semantics and syntax helps readers comprehend challenging texts.

Verbal Reasoning



Refers to a reader's ability to think about a text and infer meaning from what is explicitly and implicitly stated. To do so, readers must engage in cognitive and metacognitive processes such as:

making logical inferences,
integrating ideas within and across texts, and
interpreting abstract language

Literary Knowledge



Literacy knowledge encompasses all of the ideas we know are true about language, books and the text within them. When children have knowledge of literacy concepts, it means that they have a foundation in all of the elements that make up conventional ways of reading, writing, and speaking.

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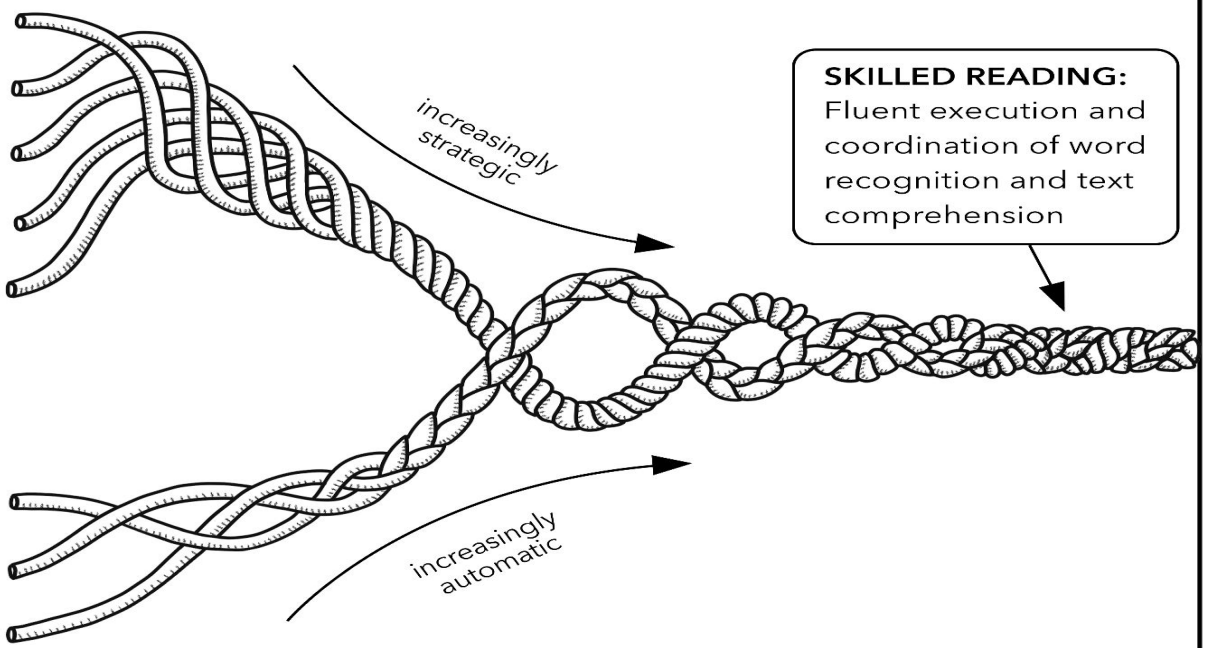
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Scarborough, 2001

Standards and SOR



- **Evidence-Based Review Process:** As we revisited the ELA standards, we systematically aligned each standard with key elements of the Science of Reading.
- **Focus on Foundational Skills:** Phonemic awareness, phonics, fluency, vocabulary, and comprehension were cross-referenced with current standards to ensure research-backed instructional alignment.
- **Identification of Gaps and Strengths:** Through this process, we identified areas where the standards were strong or needed revision to better reflect best practices in reading instruction.
- **Commitment to Continuous Improvement:** Our goal was to ensure that all standards fully support a structured literacy approach rooted in the Science of Reading.