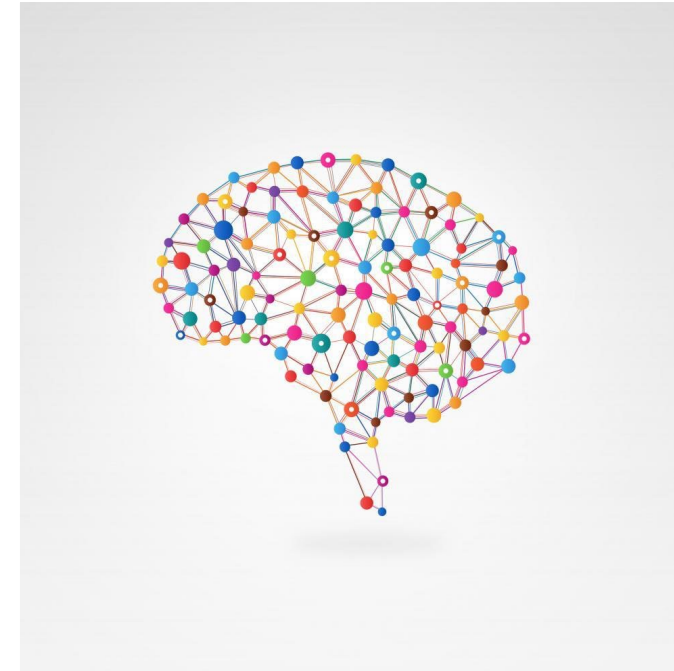
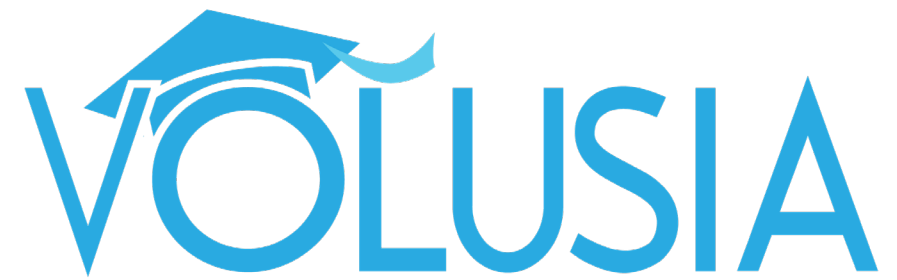




Reading Rewired: The Science Behind How We Learn to Read



September 3, 2025



COUNTY SCHOOLS

EMPOWERING A CULTURE OF EXCELLENCE



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Dr. Carmen J. Balgobin
Superintendent of Schools



This presentation aligns to the following goals as part of the Volusia County Schools 2024-2027 Strategic Plan:

- Goal: All Students will engage in high levels of learning EVERY day.
 - Guardrail 1: Recruit, support, develop and retain high-quality staff.
 - Guardrail 2: Provide conditions that enhance student learning.
 - Guardrail 3: Improve operational efficiency and maximize resources to support student learning.
 - Guardrail 4: Ensure high-quality community engagement with all stakeholders.



Looking back.

Looking forward.



01

The Complexity of Reading

02

The Science of Reading

03

Implications for Classroom
Instruction

04

Role of Professional Learning



The Complexity of Reading



"The regulation of gas exchange in plants is primarily controlled by stomata, which are microscopic pores located on the surface of leaves. Guard cells flank each stoma and respond to environmental stimuli such as light intensity, carbon dioxide concentration, and internal water pressure. When water enters the guard cells via osmosis, they swell and curve outward, opening the stomatal pore to allow carbon dioxide to diffuse into the leaf for photosynthesis. Conversely, under conditions of water stress, abscisic acid (ABA) signals the guard cells to lose turgor pressure, resulting in stomatal closure to prevent excessive transpiration."





Why it is Difficult..

1. **Motivation and Engagement**
2. **Technical vocabulary:**
 - Words like *stomata*, *guard cells*, *osmosis*, *diffuse*, *abscisic acid*, and *turgor pressure* are specialized and may be unfamiliar without prior instruction.
3. **Multi-step process:**
 - The process links **cellular mechanisms** (osmosis, turgor changes) with **whole-plant functions** (photosynthesis and water conservation), requiring integration of concepts.
4. **Abstract cause-effect relationships:**
 - Understanding how environmental signals lead to molecular changes in guard cells that affect gas exchange and water loss is conceptually complex.
5. **Embedded phrases and modifiers:**
 - Phrases like "*under conditions of water stress*" and "*to allow carbon dioxide to diffuse into the leaf*" add meaning but also syntactic complexity.
6. **Background Knowledge**
7. **Familiarity with Genre**



The Science of Reading



The Science of Reading is *not*:

- An ideology
- A philosophy
- A political agenda
- A one-size-fits-all approach
- A program of instruction
- A specific component of instruction



-Dr. Louisa Moats



The Science of Reading *is*:

“The **emerging consensus** from many related disciplines, based on literally **thousands of studies**, supported by hundreds of millions of research dollars, **conducted across the world in many languages**.

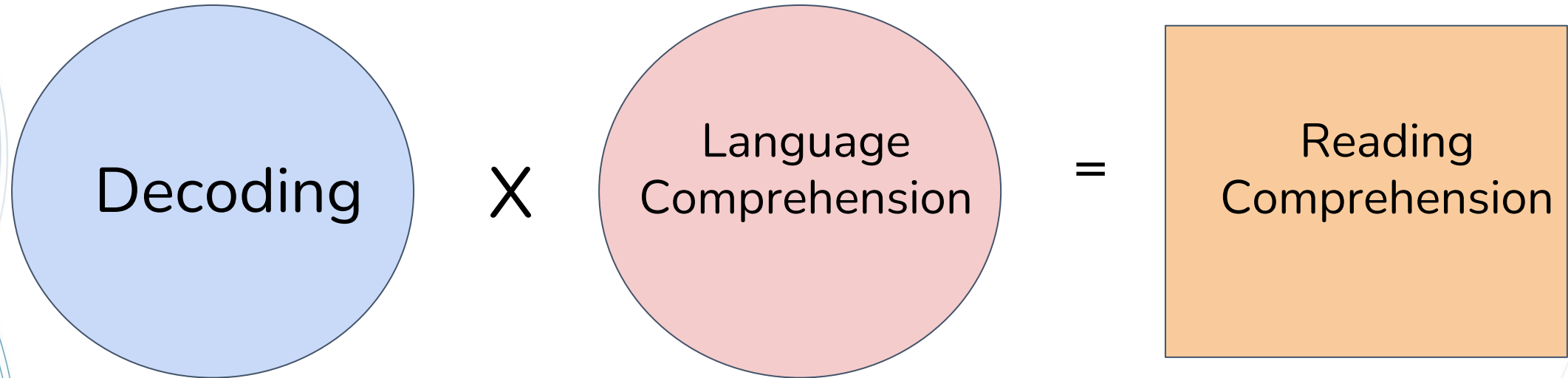
These studies have revealed a great deal about how we learn to read, what goes wrong when students don't learn, and what kind of instruction is most likely to work best for the most students.”



-Dr. Louisa Moats



Simple View of Reading (Gough & Tunmer, 1986)





Scarborough's Reading Rope

(Hollis Scarborough, 2001)

Language Comprehension

BACKGROUND KNOWLEDGE
(facts, concepts, etc.)

VOCABULARY
(breadth, precision, links, etc.)

LANGUAGE STRUCTURE
(syntax, semantics, etc.)

VERBAL REASONING
(inference, metaphor, etc.)

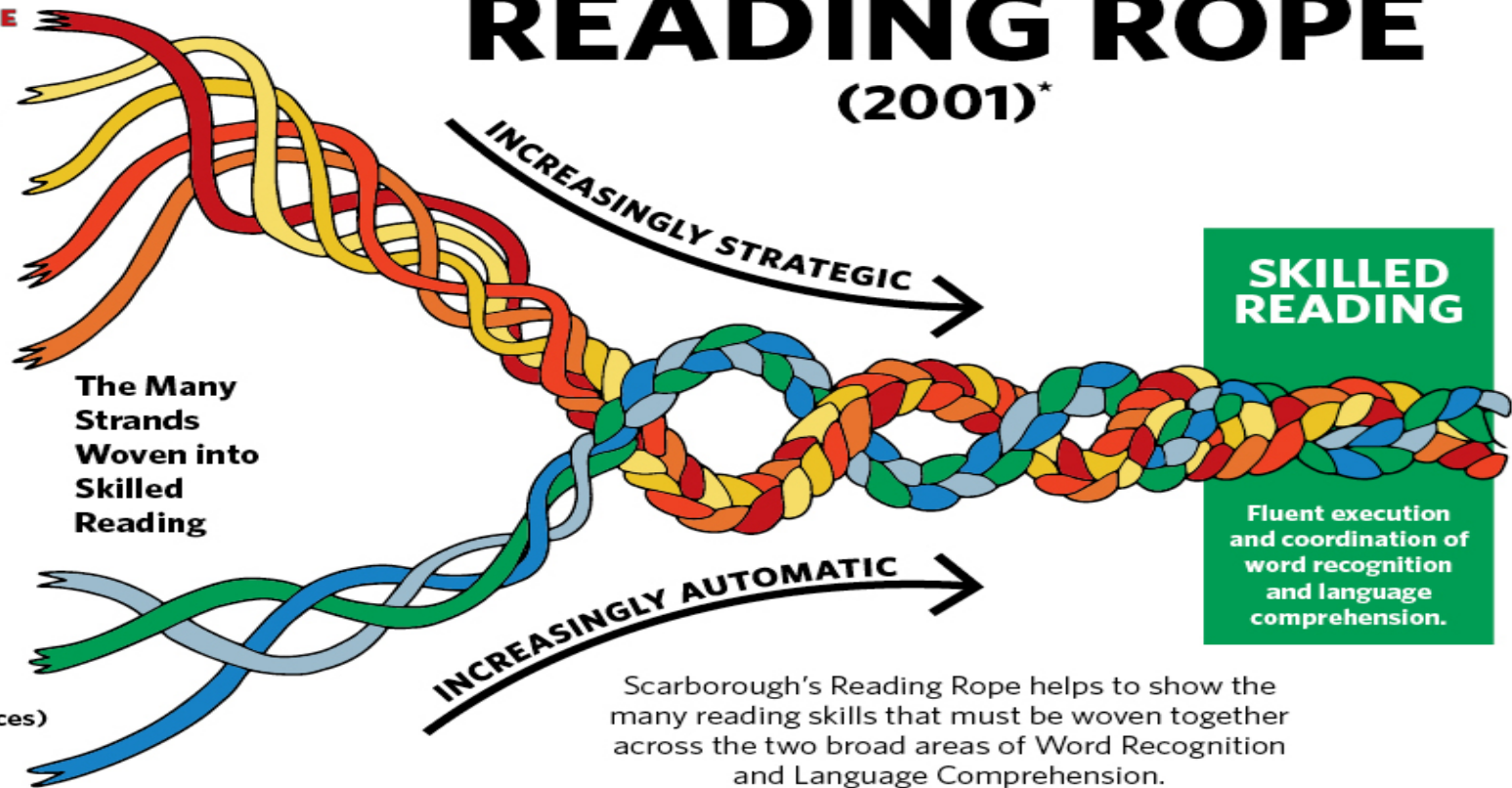
LITERACY KNOWLEDGE
(print concepts, genres, etc.)

Word Recognition

PHONOLOGICAL AWARENESS
(syllables, phonemes, etc.)

DECODING
(alphabetic principle,
spelling—sound correspondences)

SIGHT RECOGNITION
(of familiar words)



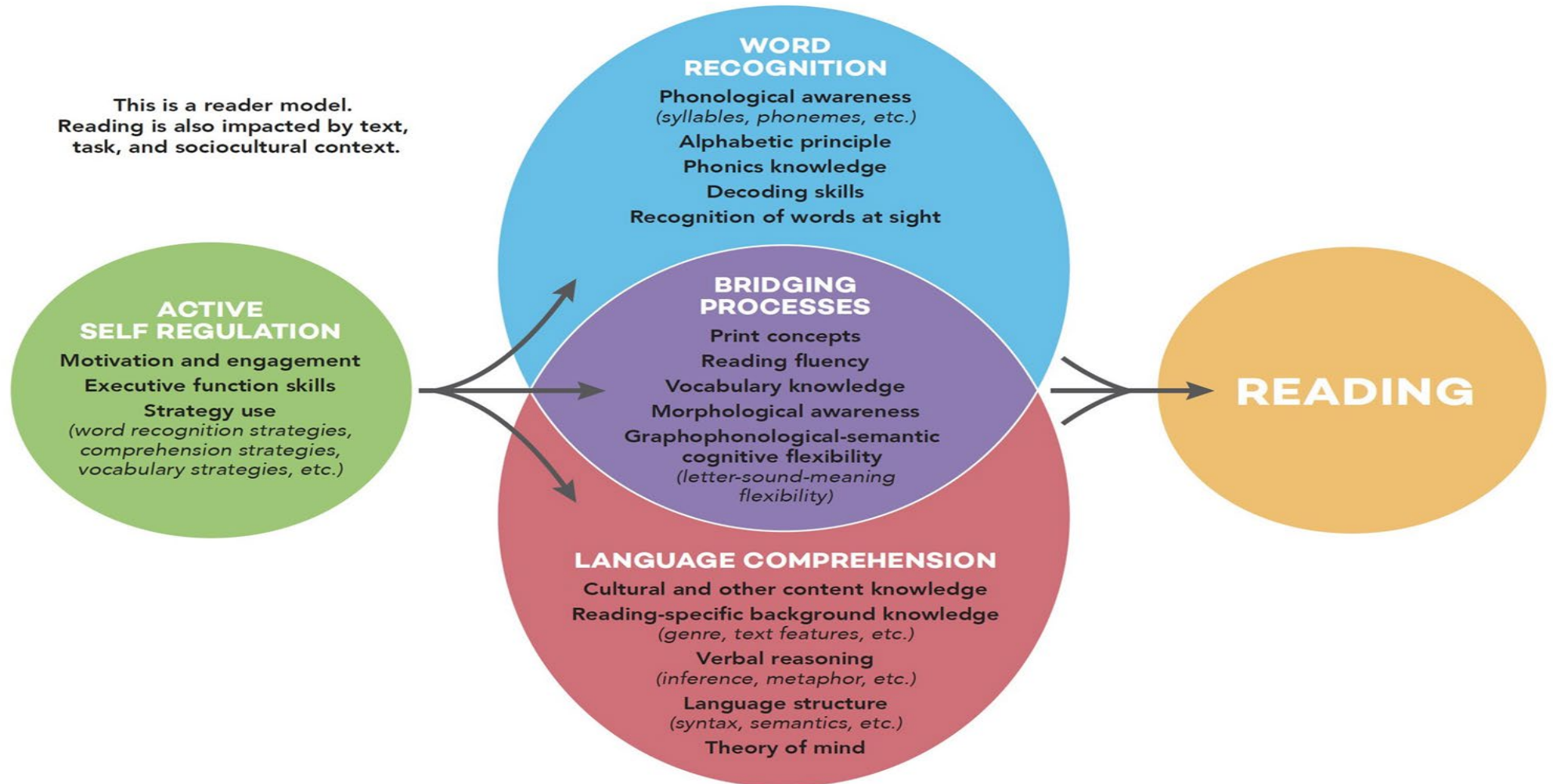
Scarborough's Reading Rope helps to show the many reading skills that must be woven together across the two broad areas of Word Recognition and Language Comprehension.

*What is the Reading Rope? (n.d.). *Braintrust Tutors*. March 16, 2023
<https://braintrusttutors.com/what-is-the-reading-rope/>



Active View of Reading (Duke & Cartwright, 2021)

ACTIVE VIEW OF READING

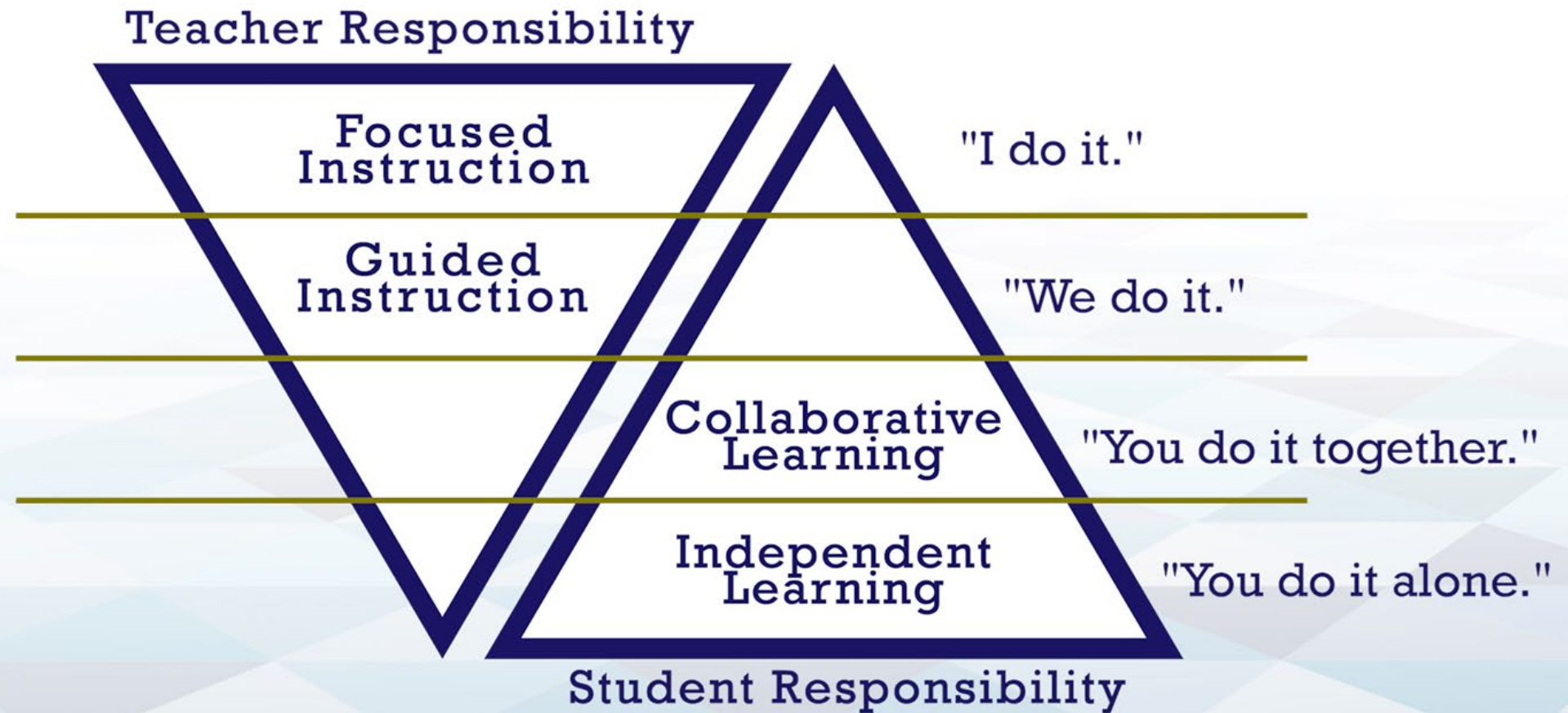






Stepping into the Classroom







What a Science of Reading Classroom Looks Like...

- **Systematic Phonics Instruction:**
 - Stop relying on incidental teaching of sound-spelling patterns.
 - Decoding skills are taught explicitly and sequentially.
- **Purposeful, Deliberate Practice:**
 - Provide engaging word work activities that reinforce phonics skills.
 - Include purposeful reading and writing tasks that align with whole group and small group instruction
- **Shift in Comprehension Instruction:**
 - Move away from leveled reading groups and round-robin reading.
 - Use one rich, complex text for the entire class.
- **Structured Text Engagement:**
 - Conduct multiple reads of the same text, starting with teacher modeling.
 - Facilitate student practice through partner readings to build fluency.
- **High-Quality Discussions:**
 - Foster meaningful conversations focused on language, structure, and deep understanding.
 - Ensure both teacher and student voices are engaged in discussing the text.

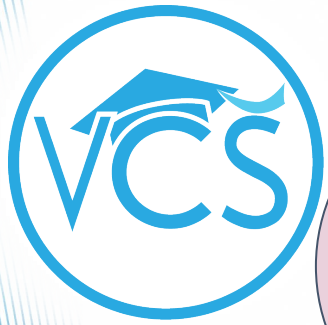
What are Literacies within the Disciplines? The following lists for each of the major content areas, while not comprehensive, can act as starting points through which communities of teachers can begin to think in terms of disciplinary literacy (Lent, 2016).

	Read	Write	Think
Science	<i>When scientists read, they</i> • Ask "Why?" more than "What?" • Interpret data, charts, illustrations • Seek to understand concepts and words • Determine validity of sources and quality of evidence • Pay attention to details	<i>When scientists write, they</i> • Use precise vocabulary • Compose in phrases, bullets, graphs, or sketches • Use passive voice • Favor exactness over craft or elaboration • Communicate in a systematic form	<i>When scientists think, they</i> • Tap into curiosity to create questions • Rely on prior knowledge or research • Consider new hypotheses or evidence • Propose explanations • Create solutions
History	<i>When historians read, they</i> • Interpret primary and secondary sources • Identify bias • Think sequentially • Compare and contrast events, accounts, documents and visuals • Determine meaning of words within context	<i>When historians write, they</i> • Create timelines with accompanying narratives • Synthesize info/evidence from multiple sources • Emphasize coherent organization of ideas • Grapple with multiple ideas and large quantities of information • Create essays based on argumentative principles	<i>When historians think, they</i> • Create narratives • Rely on valid primary and secondary sources to guide their thinking • Compare and contrast or ponder causes and effects • Consider big ideas or inquiries across long periods of time • Recognize bias
Math	<i>When mathematicians read, they</i> • Use information to piece together a solution • Look for patterns and relationships • Decipher symbols and abstract ideas • Ask questions • Apply mathematical reasoning	<i>When Mathematicians write, they</i> • Explain, justify, describe, estimate or analyze • Favor calculations over words • Use precise vocabulary • Include reasons and examples • Utilize real-word situations	<i>When Mathematicians think, they</i> • Consider patterns • Utilize previous understandings • Find connections • Estimate, generalize, and find exceptions • Employ mathematical principles
English Language Arts	<i>When students of English read, they</i> • Understand how figurative language works • Find underlying messages that evolve as theme • Assume a skeptical stance • Pay attention to new vocabulary or words used in new ways • Summarize and synthesize	<i>When students of English write, they</i> • Engage in a process that includes drafting, revising, and editing • Use mentor texts to aid their writing craft • Pay attention to organization, details, elaboration and voice • Rely on the feedback of others • Avoid formulaic writing	<i>When students of English think, they</i> • Reflect on multiple texts • Ask questions of the author • Consider research or others ideas • Discuss ideas and themes • Argue both sides of a point



The Role of Professional Learning





Supportive
Environment

Shared

Relevant
&
Student-
Centered

Ongoing

Evidence-
Based

Key Principles of Effective Professional Learning

Data-
Driven

Teacher-
Led

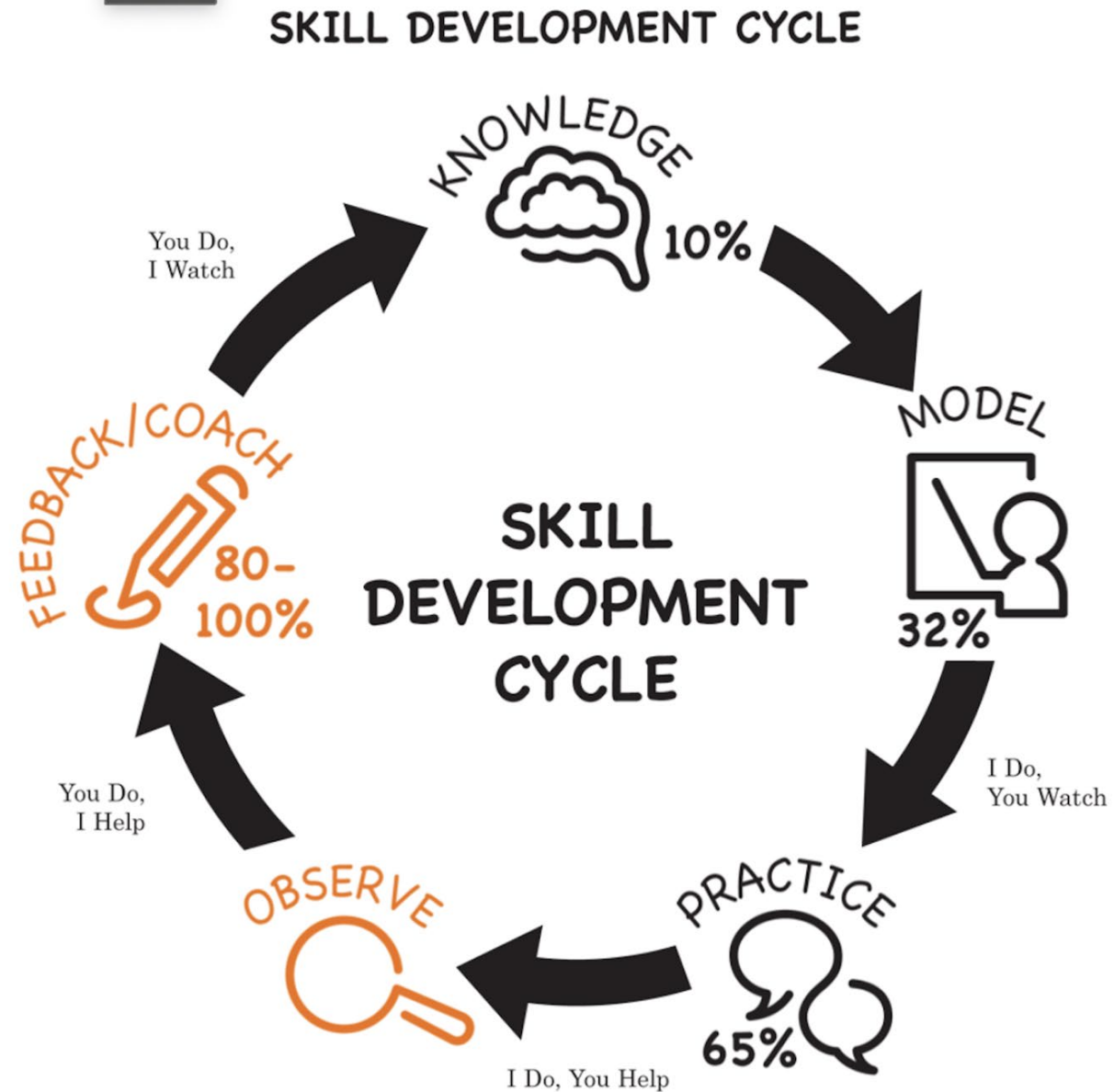
Reflective

Equity
Focused

Differentiated



% recalled
after 3
months
time...





Science of Reading: Professional Learning Series





District-Wide Reading Initiatives





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