The Science of Reading and The Science of Writing

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C&I Committee Meeting

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Today's Goals

- To explore the Science of Reading and the Science of Writing as the basis for our ELA work and curriculum
- To reflect on the changes this research has brought about in our classrooms
- To participate in a writing task based on the Science of Writing that is similar to those our students may experience in the classroom

What does it take to read a complex text?

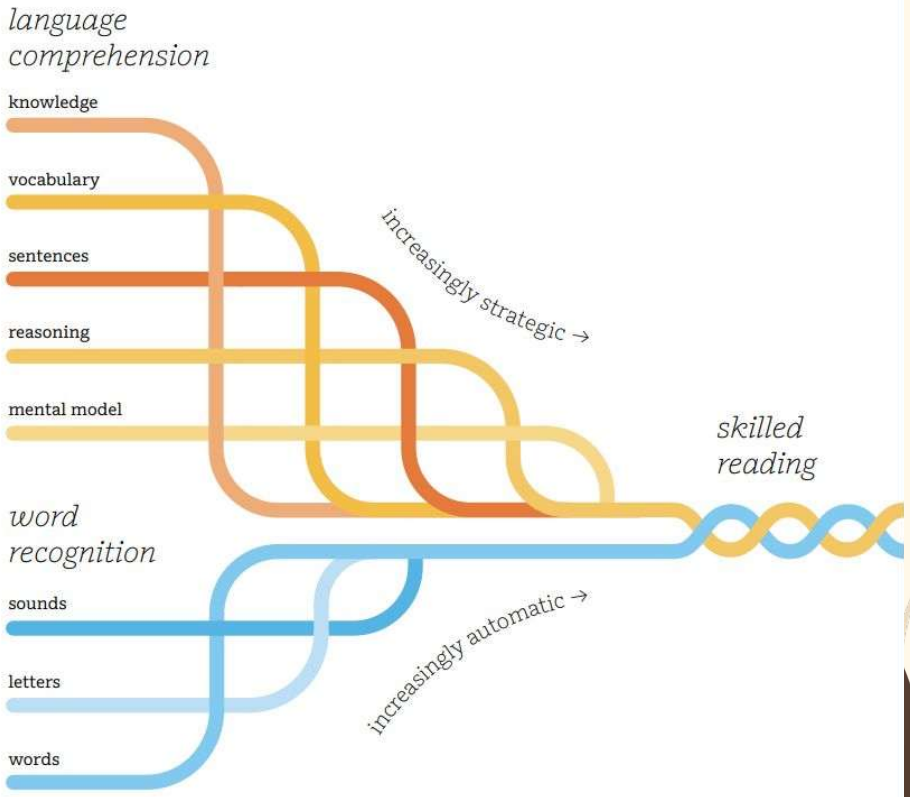
What is the Science of Reading?

- The Science of Reading (SoR) is not a program or a trend, but a vast body of research from the last 50+ years.
- It draws from multiple fields including cognitive psychology, neuroscience, and linguistics.
- The research shows that while speaking is a natural biological process for humans, reading is not—it must be explicitly and intentionally taught
- It advocates for an integrated approach to teaching reading that includes phonics and phonemic awareness, word recognition, fluency, vocabulary, content knowledge development, and comprehension.

Scarborough's Rope (2001)

The elements of early reading

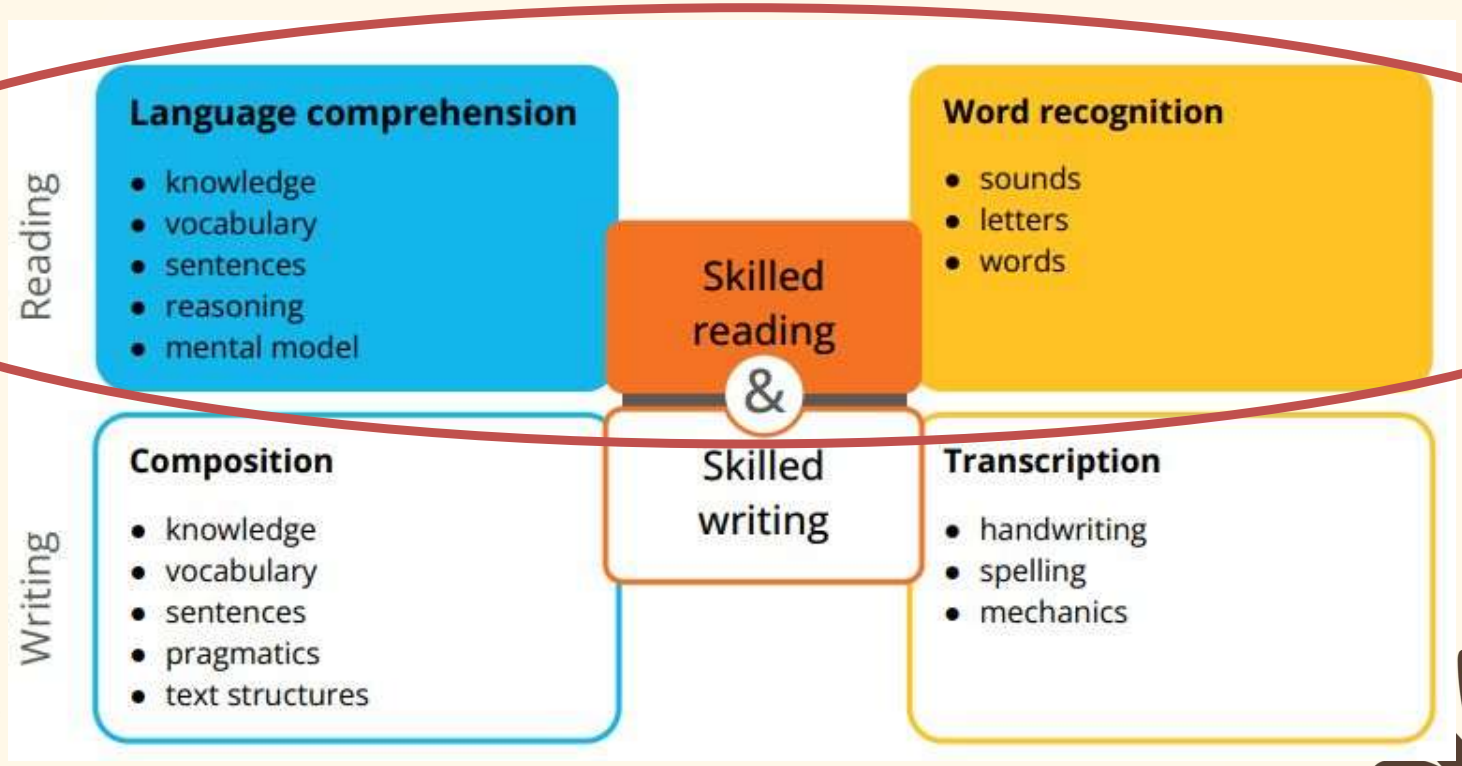
Strand	Definition	Example
knowledge	Have broad background knowledge—facts, concepts, causal relationships, etc.—of the sort authors will assume you share.	How could heavy snowfall lead to a flood?
vocabulary	Know a wide range of word meanings (breadth), each connected to a web of other word meanings (depth); additionally, know word-part meanings such as the 'pre' in 'preview' (morphology).	Say as many words as you can that mean the same as big words.
sentences	Extract ideas from sentences using syntax, vocabulary, figures of speech, and background knowledge.	Say why this is funny: *I've had a wonderful evening but this wasn't it.* (Groucho Marx)
reasoning	Make connections between ideas across sentences (e.g., inferencing), creating a web of ideas for a passage (textbase).	Say why this is funny: *Did you get a haircut? No, I got all of them cut.*
mental model	Build a big-picture model of the situation described in a text (situation model) and use it across texts.	Three turtles rested on a floating log; a fish swam beneath it. Were the turtles above the fish?
sounds	Know that spoken words are made up of sounds or phonemes (phonemic awareness).	What are the sounds in 'ship'?
letters	Know this spelling stands for that sound (the alphabetic principle).	Say the most common sounds for: *s, d, ee, ch.*
words	Read words by blending sounds and, increasingly, automatically on sight (sight recognition)	Say these words: *bat, late, though, eye.*



Principles of the Science of Reading



The Science of Reading and The Science of Writing



Components of Skilled Reading

Skilled reading

Language comprehension

Component	Definition
knowledge	Have broad background knowledge (facts, concepts, causal relationships, etc.) of the sort authors will assume you share.
vocabulary	Know a wide range of word meanings, each connected to a web of other word meanings; know word-part meanings, such as the 'pre' in 'preview' (morphology).
sentences	Extract ideas from sentences using syntax, vocabulary, figures of speech, and background knowledge.
reasoning	Make connections between ideas across sentences, creating a web of ideas for a passage.
mental model	Build a big-picture model of the situation described in a text (situation model) and use it across texts.

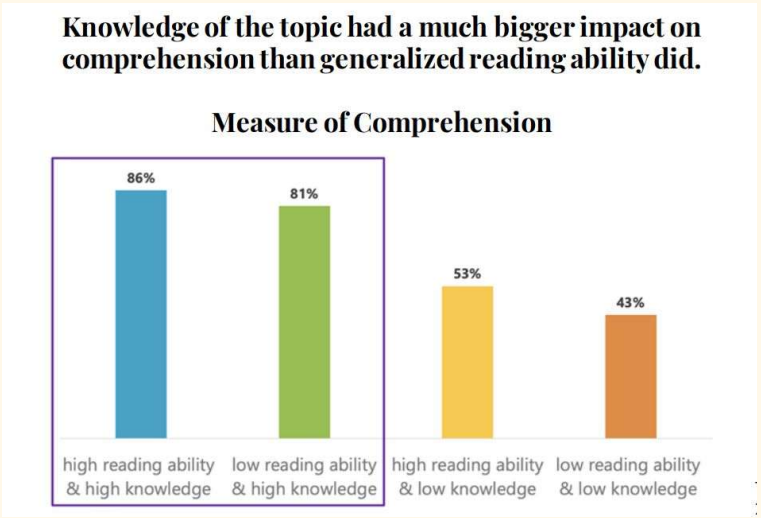
Word recognition

Component	Definition
sounds	Know that spoken words are made up of sounds or phonemes (phonemic awareness).
letters	Know this spelling stands for that sound (the alphabetic principle).
words	Read words by blending sounds and, increasingly, automatically on sight (sight recognition).

Principle 5 - Core Knowledge

Recht & Leslie (1988) - The Baseball Study

High reading ability **High** knowledge of baseball	**High** reading ability **Low** knowledge of baseball
Low reading ability **High** knowledge of baseball	**Low** reading ability **Low** knowledge of baseball



- A 2021 review of 23 studies that focused on the links between background knowledge and reading comprehension consistently found that children with more background knowledge could better comprehend texts.

Principle 5 - Core Knowledge

But what about the idea of activating prior knowledge?

- Activating knowledge is not the same as building knowledge
- Commonly used strategies like KWLs, Text-to-text/self/world connections, etc. only work if students have prior knowledge to draw upon

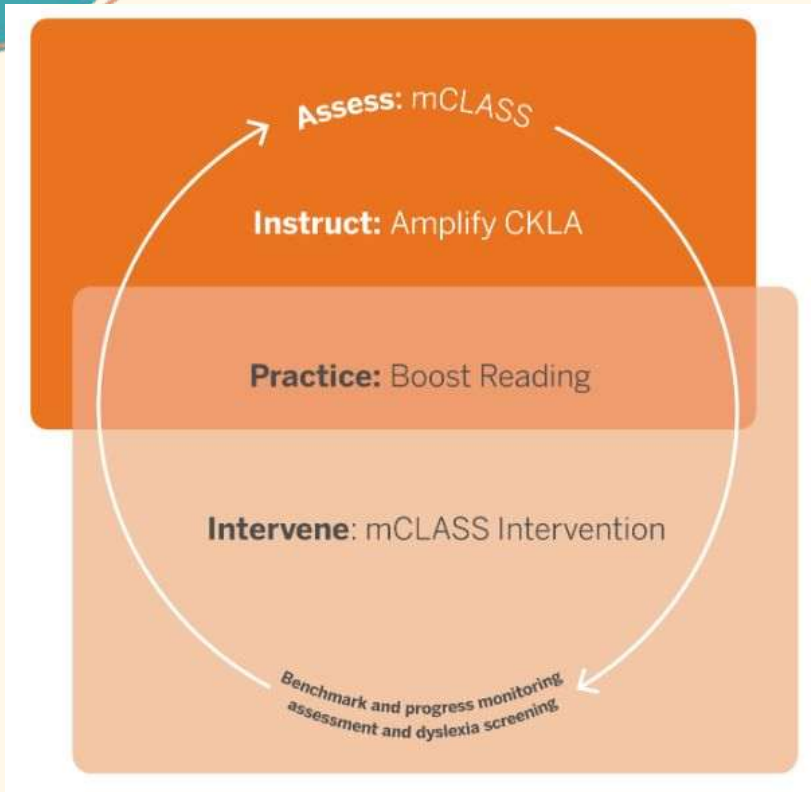
Within Amplify's knowledge domains, concepts spiral and deepen from grade to grade, allowing students to create schema in the younger grades that they can then activate in the upper grades.

Principle 5 - Core Knowledge



Where do we see knowledge introduced in a earlier unit or a younger grade that will be activated again in a later unit or grade?

Principle 8 - Universal Screening, Instruction, and Intervention

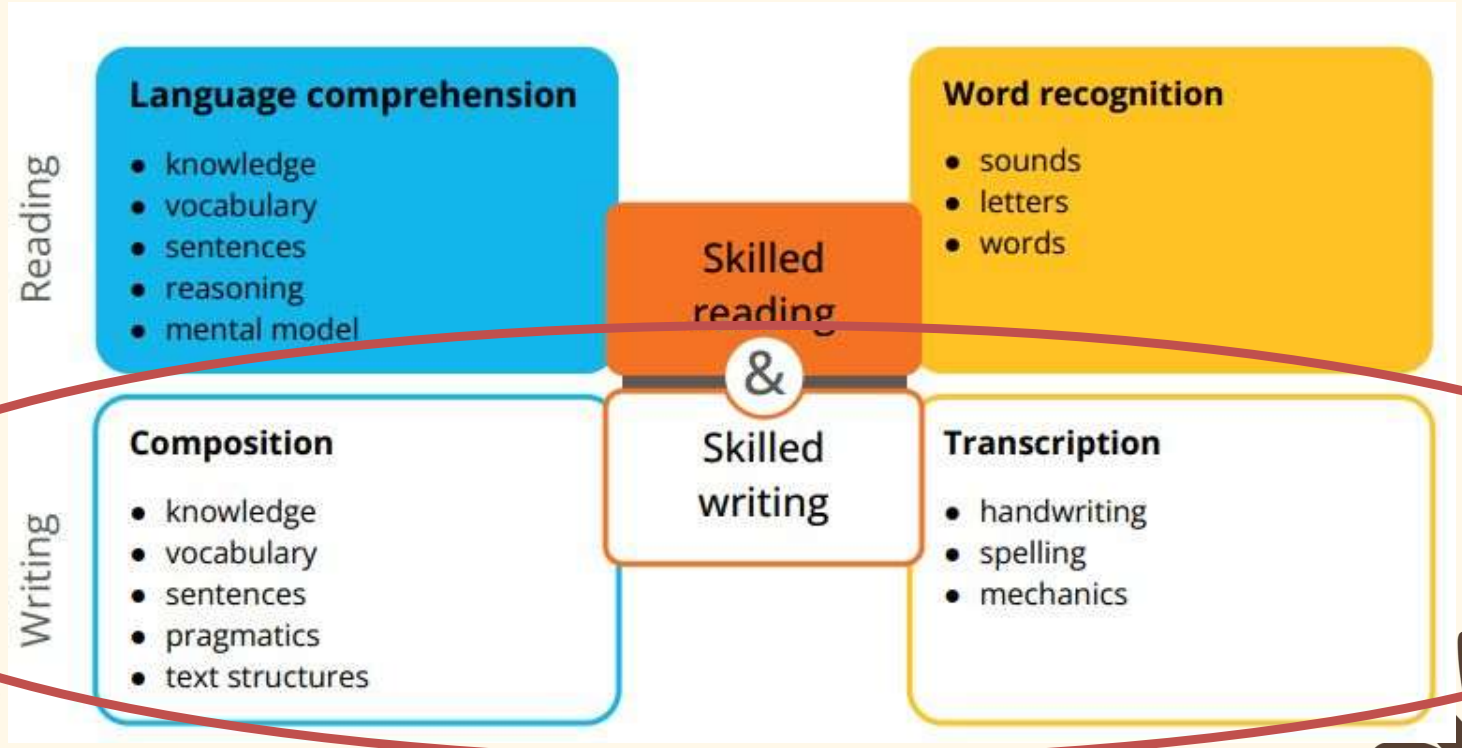


Amplify's MTSS structure provides differentiated support for students at all levels, including universal screening and progress monitoring using mClass, strong Tier I instruction for all, and individual and small group intervention and enrichment opportunities.

"Writing is the hardest thing we ask students to do. Fortunately, we have decades of research that shows us how best to teach and learn how to write, known as the Science of Writing."

- Natalie Wexler, author of *The Knowledge Gap* and *The Writing Revolution*

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Components of Skilled Writing

Skilled writing

Composition

Component	Definition
knowledge	Draw on broad background knowledge to develop ideas, provide accurate details, and strengthen written communication in a way that readers will understand and engage with.
vocabulary	Use precise language to express ideas, selecting words that clearly and appropriately convey meaning in the given context.
sentences	Construct grammatically correct sentences by understanding the arrangement of words, phrases, and clauses. Expand on basic ideas with additional details and varied sentence structures to convey complex thoughts and enhance clarity.
pragmatics	Adapt writing for the intended audience and purpose, making choices that align with the context, tone, and intended message.
text structures	Organize writing using clear structures that help readers understand the main idea, see relationships between ideas, and anticipate what follows.

Transcription

Component	Definition
handwriting	Form letters and words legibly and fluently, whether by hand or using a keyboard, to support written expression.
spelling	Apply knowledge of phonics, morphology, and spelling patterns to spell words correctly.
mechanics	Use capitalization, punctuation, and formatting conventions correctly to enhance clarity and readability.

Science of Writing Shifts



- Develop both transcription and composition skills, not just one or the other.
- Teach transcription skills in tandem with phonics, not in isolation.
- Build composition skills in the context of background knowledge.
- Start with the sentence, then expand.
- Treat pre-writing, planning, and post-writing as equally vital to the process as the writing itself.

The Writing Revolution (TWR)

- An approach to writing instruction that is grounded in the Science of Writing and is the approach used in Amplify CKLA and our PreAP program
- No separate writing block or curriculum. Instead, writing is deliberately integrated into subject-area studies.
- Breaks the writing process into manageable chunks, starting at the sentence level.
- Grammar is taught in the context of the writing process using the content of the curriculum.
- Literacy coaches conducted a book study of *TWR* last year, and have been sharing with their buildings in PLCs and grade-level planning time. The 6-12 ELA curriculum committee is now reading the text and sharing in PLCs and department meetings.

A *TWR* Sentence Activity
Because, But, So

Let's complete these sentences together.

Every weekend should be a three-day weekend **because** . . .

Every weekend should be a three-day weekend, **but** . . .

Every weekend should be a three-day weekend, **so** . . .

March by John Lewis
Because, But, So

How does this activity translate to Secondary ELA content?

Student Examples

The Joy Luck Club

Jung-mei and her mother Suyuan disagree **because** they have different views on what Jung-mei should be.

Jung-mei and her mother Suyuan disagree, **but** Suyuan has a rough past and different experiences.

Jung-mei and her mother Suyuan disagree, **so** Jung-mei struggles on what she really wants to do.

Jung-mei and her mother Suyuan disagree **because** they have different expectations.

Jung-mei and her mother Suyuan disagree, **but** they both care for each other.

Jung-mei and her mother Suyuan disagree, **so** they argue.

Student Examples

House on Mango Street Reading Check

Mango Street appears dangerous **because** the houses look run down and sketchy.

Mango Street appears dangerous, **but** it's filled with loving people who want to live a normal life.

Mango Street appears dangerous, **so** outsiders look at the people living there differently.

Mango Street appears dangerous **because** most houses are broken down or look poor.

Mango Street appears dangerous, **but** it is filled with nice people who are misunderstood and mistreated by outsiders.

Mango Street appears dangerous, **so** strangers judge their neighborhood out of fear.

Because, But, So
Content Drives Rigor

Reading Comprehension

Author's Craft

Analysis

Connections & Synthesis

Where are we and where are we going?

- 2024-2025: K-12 teachers in-serviced on the Science of Reading (6-12 SS and ELA)
- 2024-present: K-5: Science of Reading fully integrated through Amplify CKLA; continuing to support staff with the Science of Writing through coaching
- 2024-2025: Year one of PreAP English in grades 9 & 10
- 2025-present: *The Writing Revolution* book study with literacy coaches (K-12) and curriculum team (6-12)
- Beginning Fall 2026: With the curriculum team and literacy coaches, introducing *TWR* techniques at department meetings and in PLCs to bridge CKLA and PreAP programs

Any questions?

Thank you!