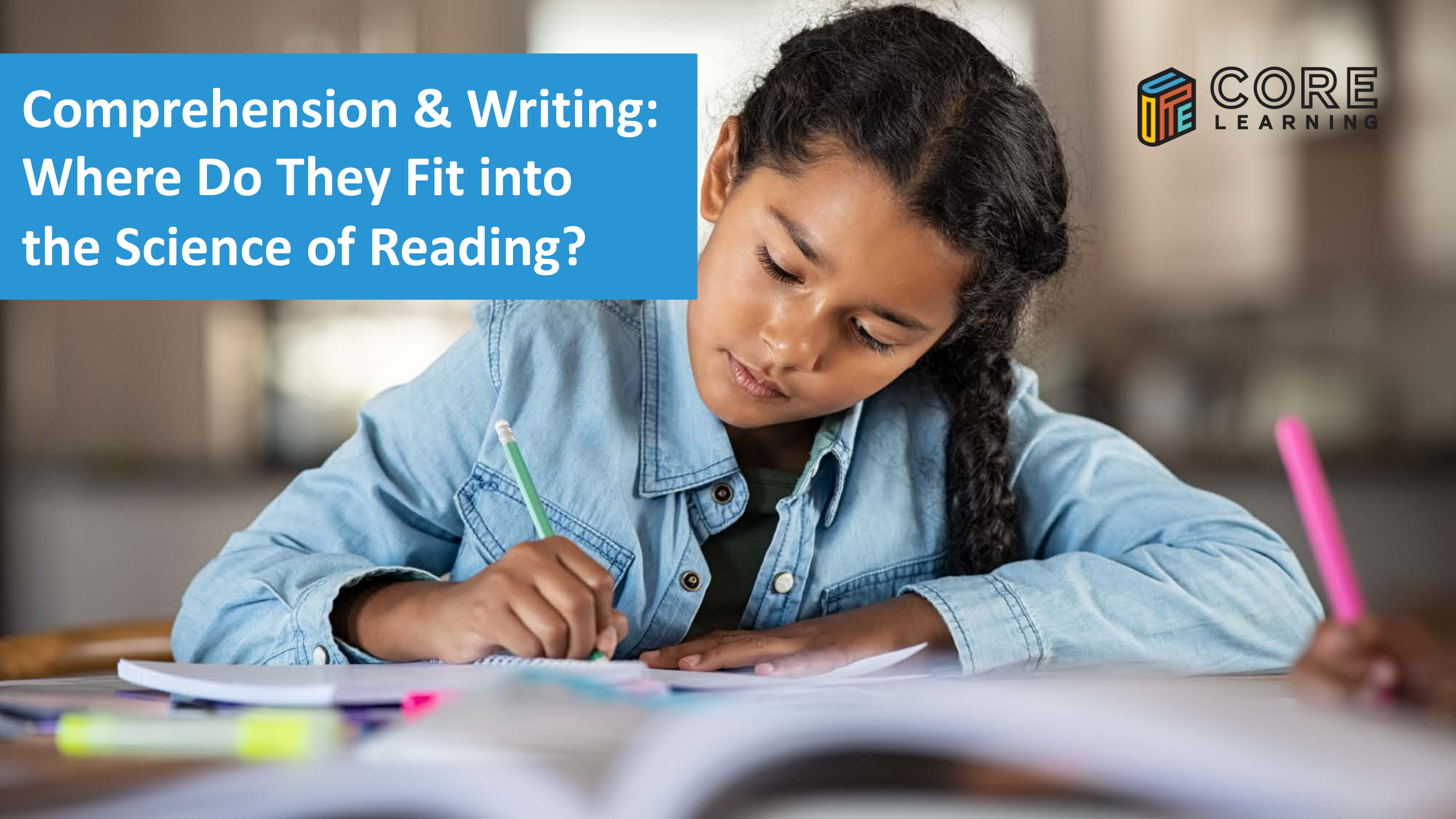
Comprehension & Writing: Where Do They Fit into the Science of Reading?



CORE LEARNING

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Exit & re-enter the webinar if you experience an audio or video lag

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Meet Your Presenter

Natalie Wexler, J.D.
Author of *The Knowledge Gap* and
Co-author of *The Writing Revolution*

What you will learn

- Why some depictions of the science of reading are open to misinterpretation about how to equip students to comprehend complex text
- How explicit writing instruction can deepen and cement academic knowledge and familiarity with complex syntax
- How individual teachers can build academic knowledge and use writing activities to compensate for knowledge gaps
- How administrators can enable students to read and write at higher levels by adopting a coherent, content-rich elementary literacy curriculum

We've been hearing a lot lately about the Science of Reading …

Education Week, 10.2.19

READING & LITERACY · EXPLAINER

How Do Kids Learn to Read? What the Science Says

Time Magazine, 8.11.22

Inside the Massive Effort to Change the Way Kids Are Taught to Read

NY Times, 10.6.22

Sounding Out a Better Way to Teach Reading

Schools are returning to phonics and other evidence-based literacy methods, and already there are signs that the switch is paying off in improved scores.

NY Times, 5.22.22

In the Fight Over How to Teach Reading, This Guru Makes a Major Retreat

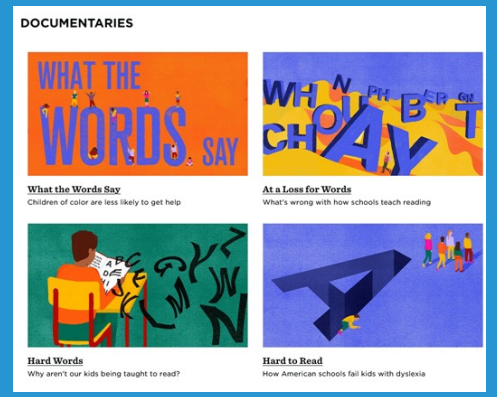
Lucy Calkins, a leading literacy expert, has rewritten her curriculum to include a fuller embrace of phonics and the science of reading. Critics may not be appeased.

NY Times, 2.15.20

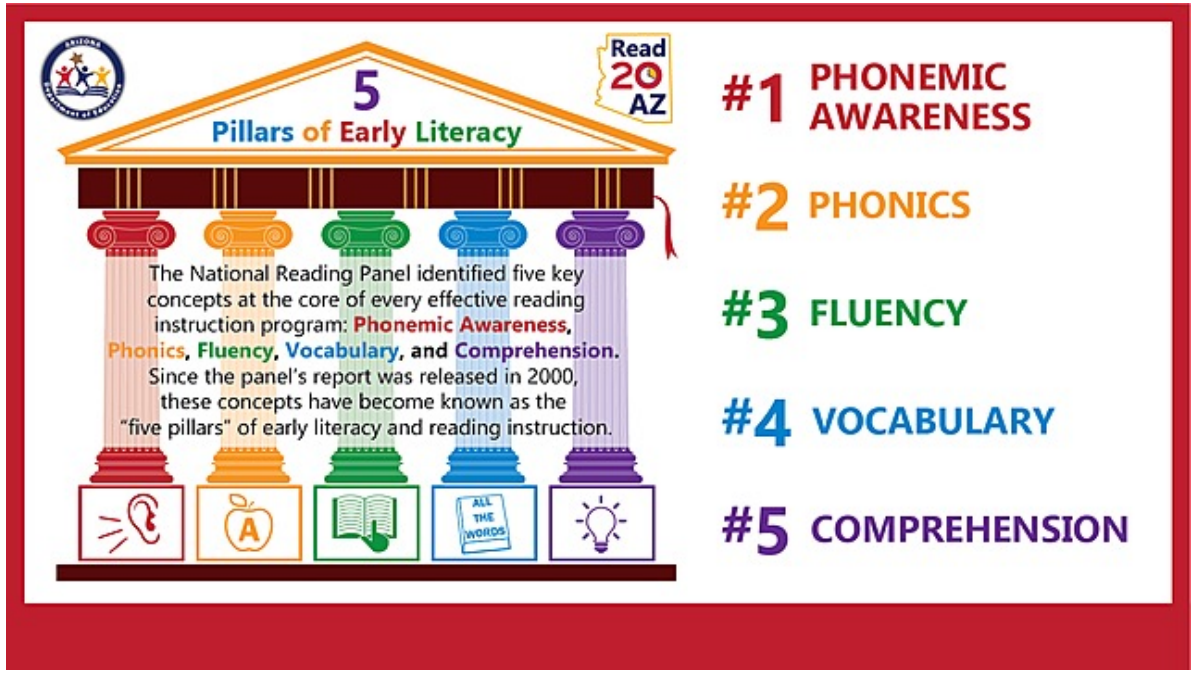
An Old and Contested Solution to Boost Reading Scores: Phonics

As test scores lag, there's a growing debate between proponents of the "science of reading," which emphasizes phonics, and traditional educators who prefer to instill a love of literature.

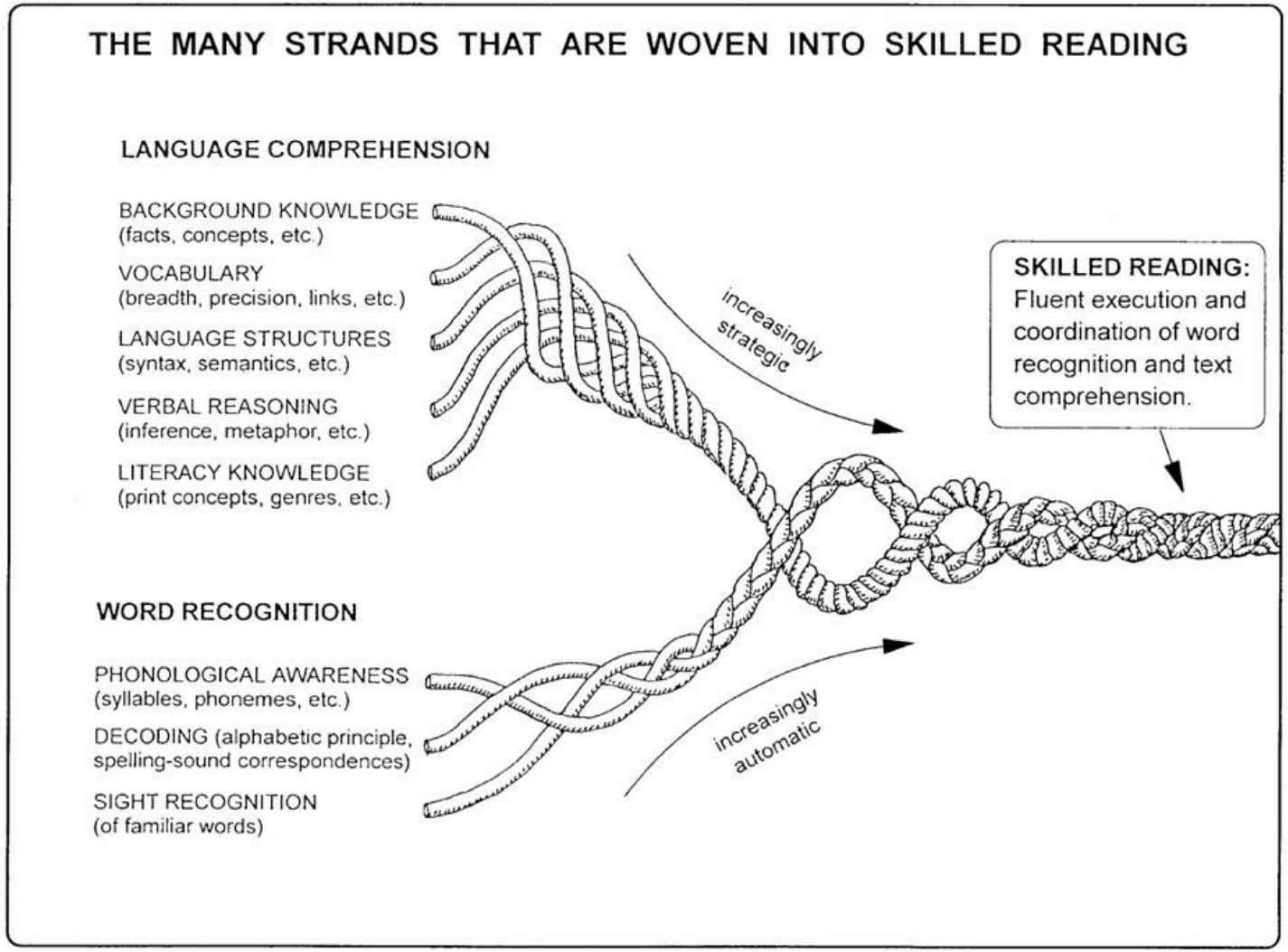
APM Reports/Emily Hanford, 2018 - present



SOR infographics DO mention comprehension …

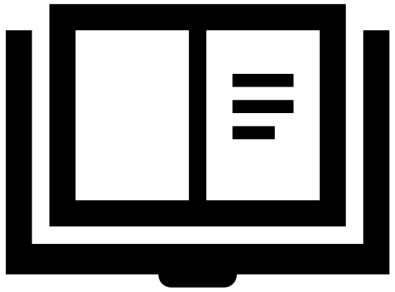


A more complex infographic: the "Reading Rope"



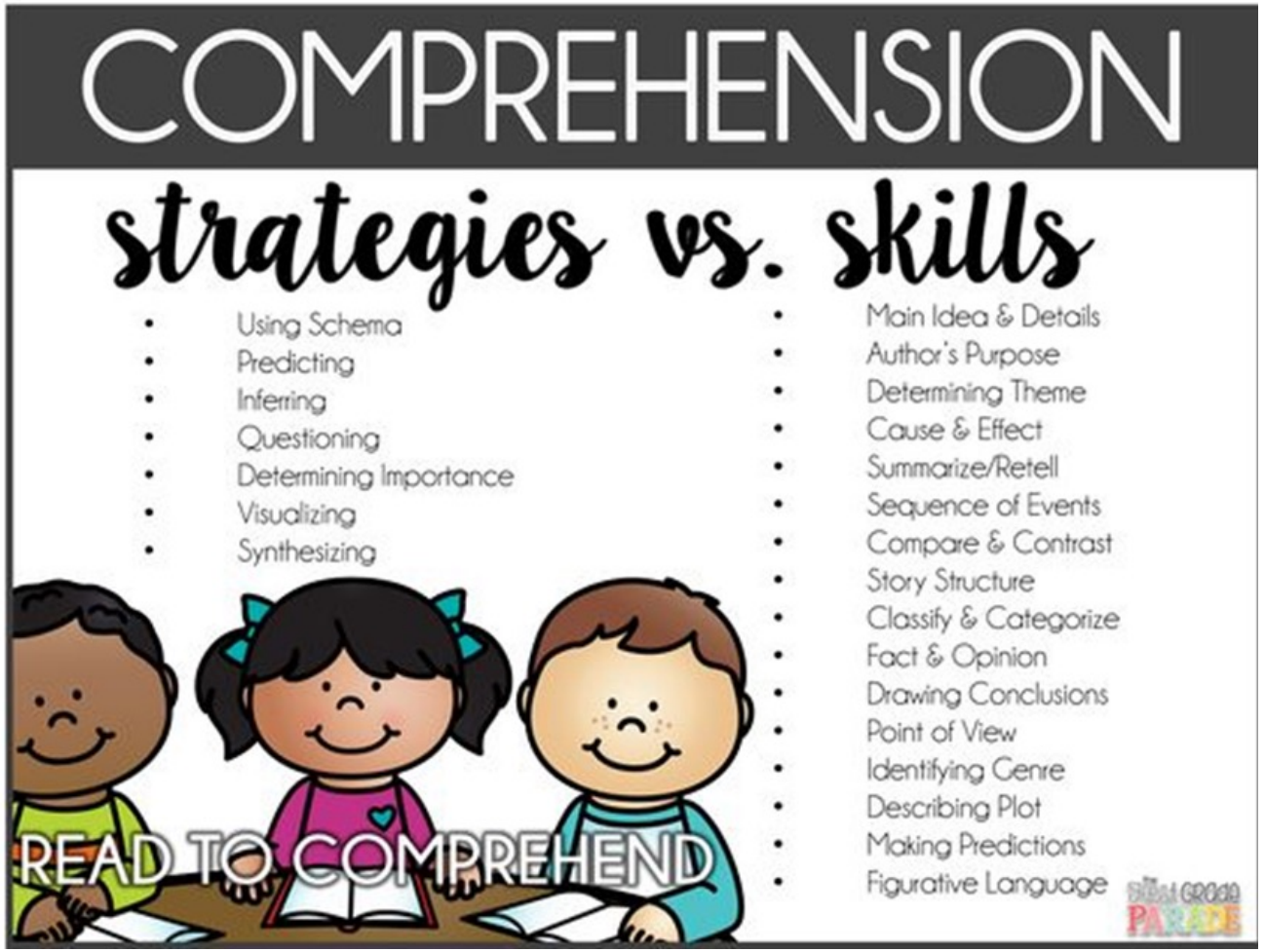
Scarborough, H. S. (2001). Connecting early language and literacy to later reading (dis)abilities: Evidence, theory, and practice. In S. Neuman & D. Dickinson (Eds.), *Handbook for research in early literacy* (pp. 97–110). New York, NY: Guilford Press.

So, does the Science of Reading tell us we *just* need to change our approach to decoding/word recognition?



The standard approach to reading comprehension

PART 1



The Standard approach to reading comprehension

PART 2

Leveled Reading

Fountas and Pinnell

Progress Monitoring by Instructional Text Reading Level

GRADE	MONTHS OF THE SCHOOL YEAR									
	1	2	3	4	5	6	7	8	9	10
K	–	–	–	A	A/B	B	B	C	C	C
1	C/D	D	E	E/F	F	G	G/H	H	I	I
2	I/J	J	J	J/K	K	K/L	L	L	M	M
3	M/N	N	N	N	O	O	O	P	P	P
4	P/Q	Q	Q	Q	R	R	R	S	S	S
5	S/T	T	T	T	U	U	U	V	V	V
6	V/W	W	W	W	X	X	X	X	Y	Y
7	Y	Y	Y	Y	Y/Z	Z	Z	Z	Z	Z
8	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
9-12	Z	Z	Z	Z+	Z+	Z+	Z+	Z+	Z+	Z+

Find the main idea

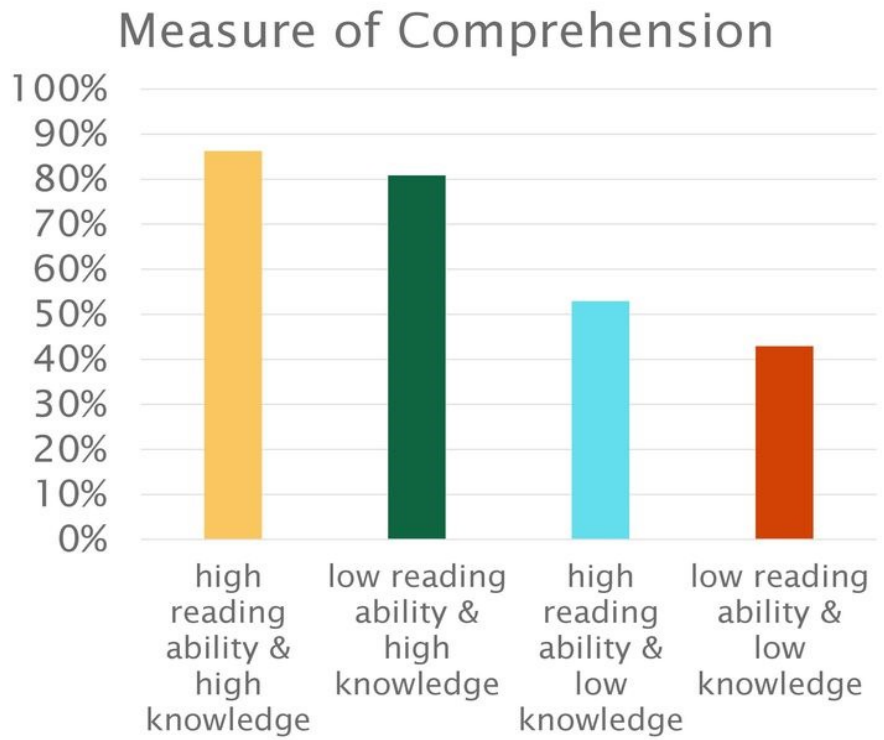
Much depended on the two overnight batsmen. But this duo perished either side of lunch—the latter a little unfortunate to be adjudged leg-before—and with Andrew Symonds, too, being shown the dreaded finger off an inside edge, the inevitable beckoned, bar the pyrotechnics of Michael Clarke and the ninth wicket.

The Baseball Study (Recht and Leslie, 1988)

The main factor in comprehension—skills, or knowledge of the topic?

This baseball study and many others show:

- Comprehension “skills” aren’t skills like riding a bike—or decoding. They don’t just get better with practice.
- There’s no such thing as a fixed “reading level.”



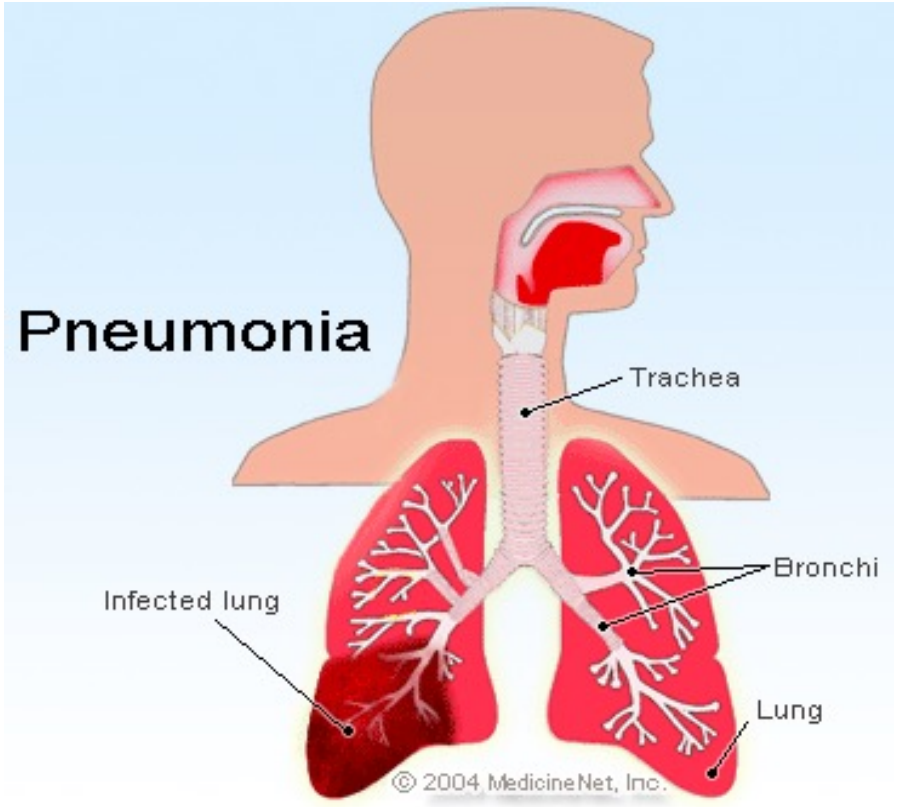
We draw on background knowledge to understand *everything* we read.

There's a strong correlation between:

1. General academic knowledge (e.g., "In what part of the body does pneumonia occur?")

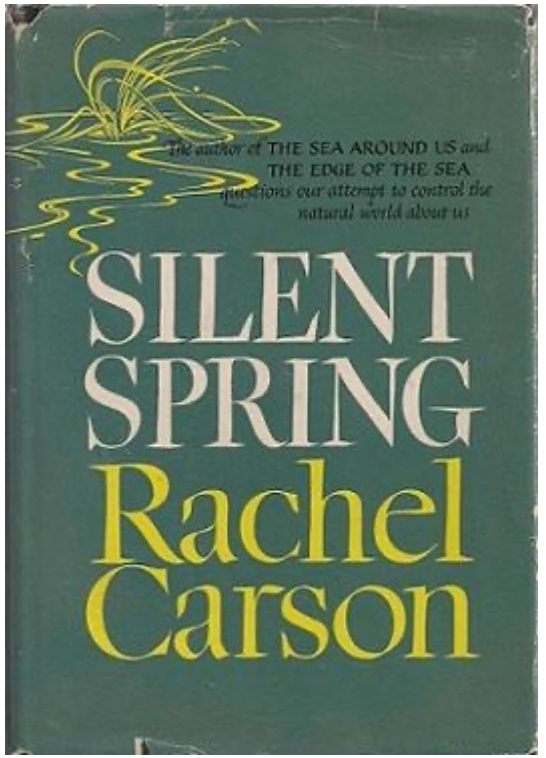
AND

2. General reading comprehension



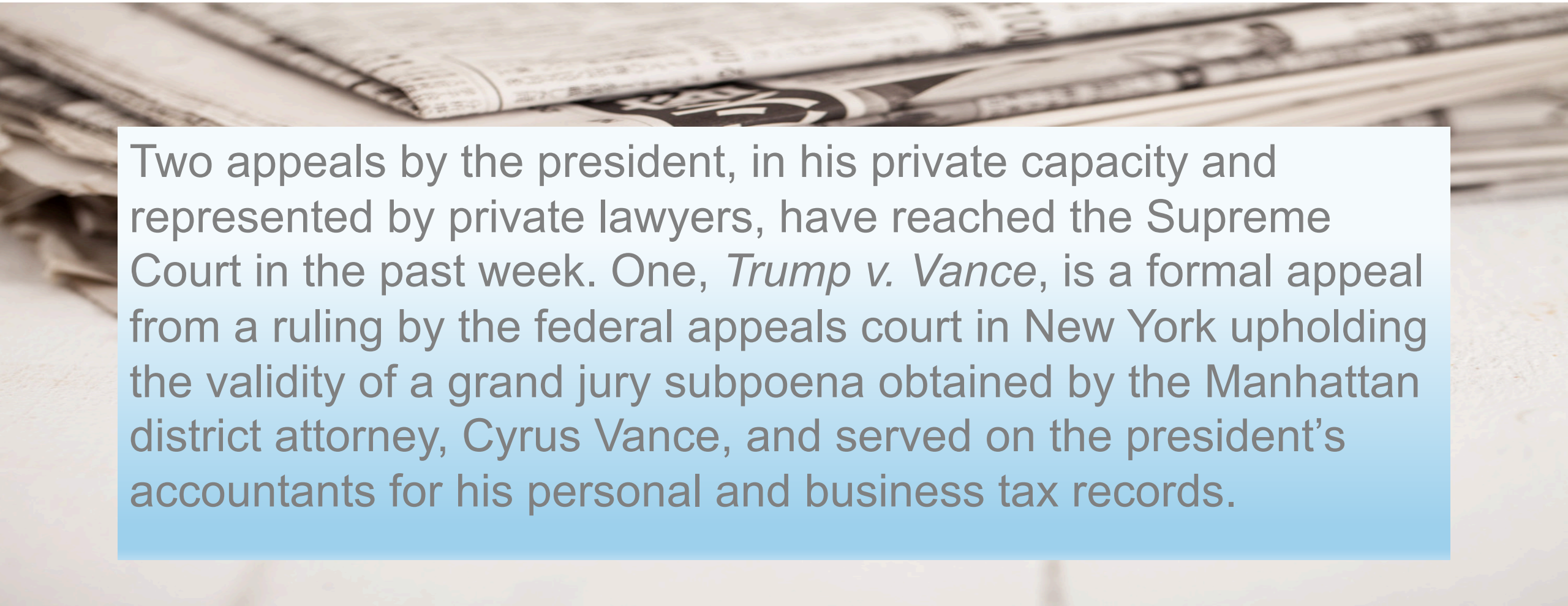
We also draw on our knowledge of complex syntax.

- "Rachel Carson, who was a scientist, writer, and ecologist, grew up in the rural river town of Springdale, Pennsylvania."
- Researcher: "What do you know about Rachel Carson now?"
- Student: "They grew up together in the same place."



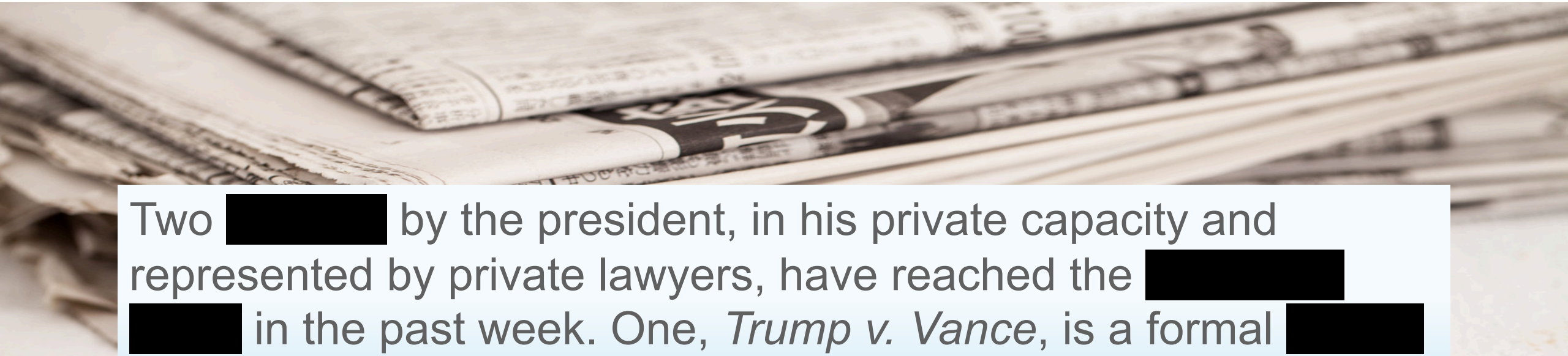
Source: Scott and Balthazar, Perspect Lang Lit. 2013 Summer; 39(3): 18–30.

What knowledge do you draw on to understand a newspaper article?



Two appeals by the president, in his private capacity and represented by private lawyers, have reached the Supreme Court in the past week. One, *Trump v. Vance*, is a formal appeal from a ruling by the federal appeals court in New York upholding the validity of a grand jury subpoena obtained by the Manhattan district attorney, Cyrus Vance, and served on the president's accountants for his personal and business tax records.

If you're unfamiliar with terms relating to the law …



Two [redacted] by the president, in his private capacity and represented by private lawyers, have reached the [redacted] [redacted] in the past week. One, *Trump v. Vance*, is a formal [redacted] from a ruling by the [redacted] in New York upholding the validity of a [redacted] obtained by the Manhattan [redacted], Cyrus Vance, and served on the president's accountants for his personal and business tax records.

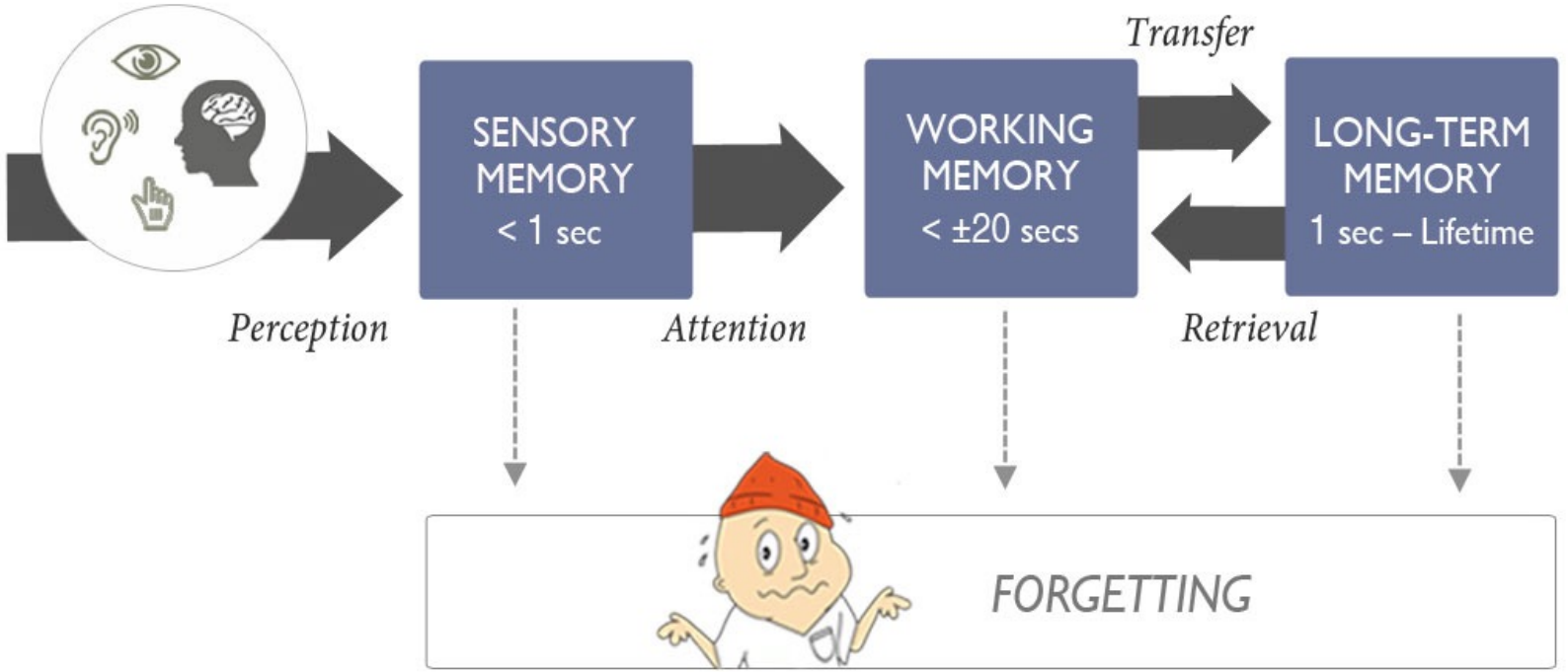
If you're unfamiliar with general academic vocabulary and complex syntax …

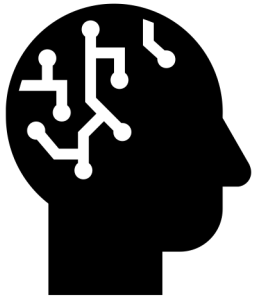
How do you acquire THAT knowledge?

Through knowledge of TOPICS.

Two [redacted] by the president, in his private [redacted] and [redacted] by private lawyers, have reached the [redacted] t in the past week. One, *Trump v. Vance*, is a [redacted].

Why knowledge helps with comprehension





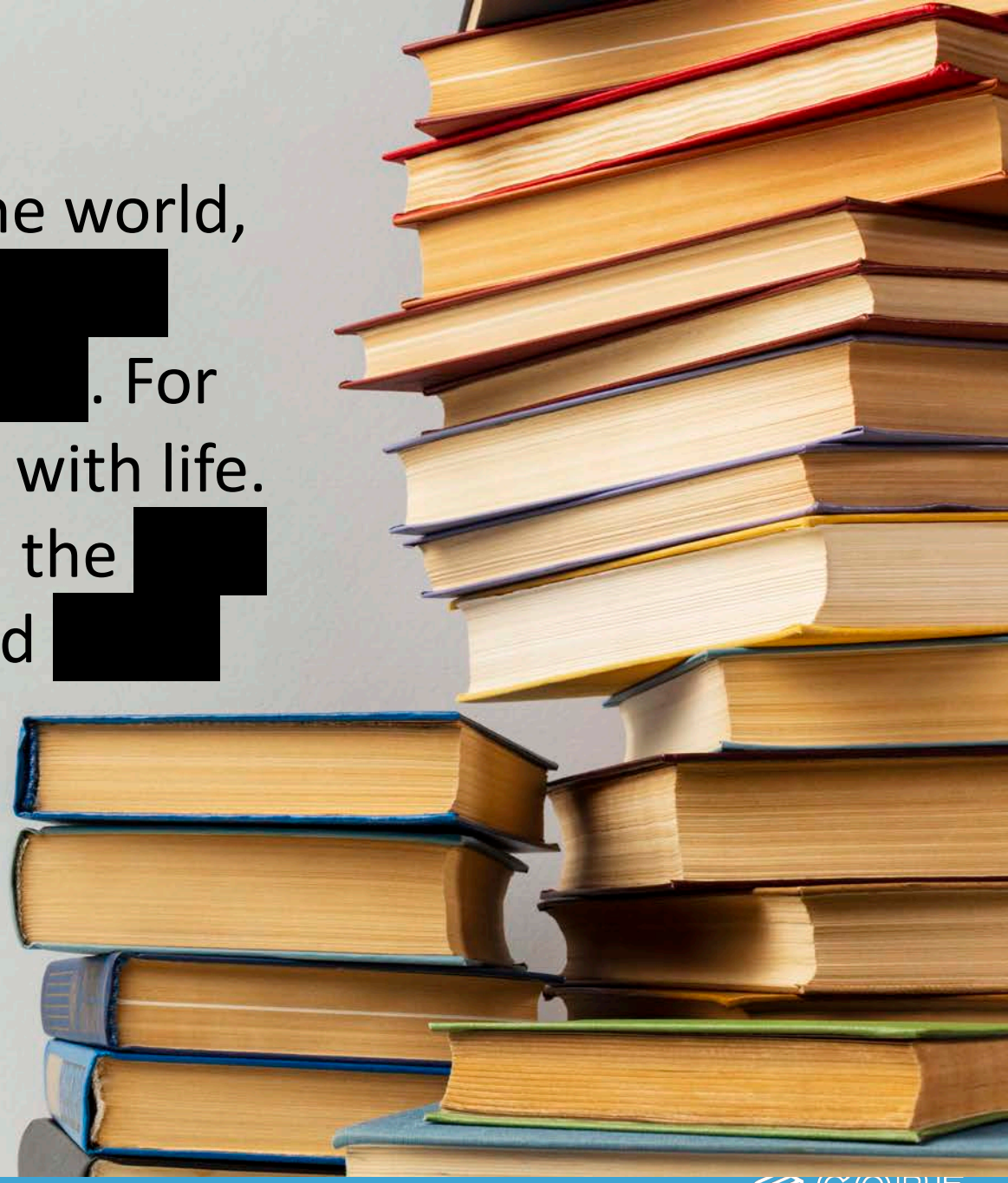
"Cognitive load" = the burden placed on working memory

How knowledge affects scores on reading tests

Passage from Third Grade PARCC Test

In one of the most remote places in the world, the Canadian Arctic, a people have survived over a thousand years. They are the Inuit. For the Inuit, the Arctic is a place teeming with life. Depending on how far north they live, the Inuit find everything from caribou herds and polar bears to beluga whales.

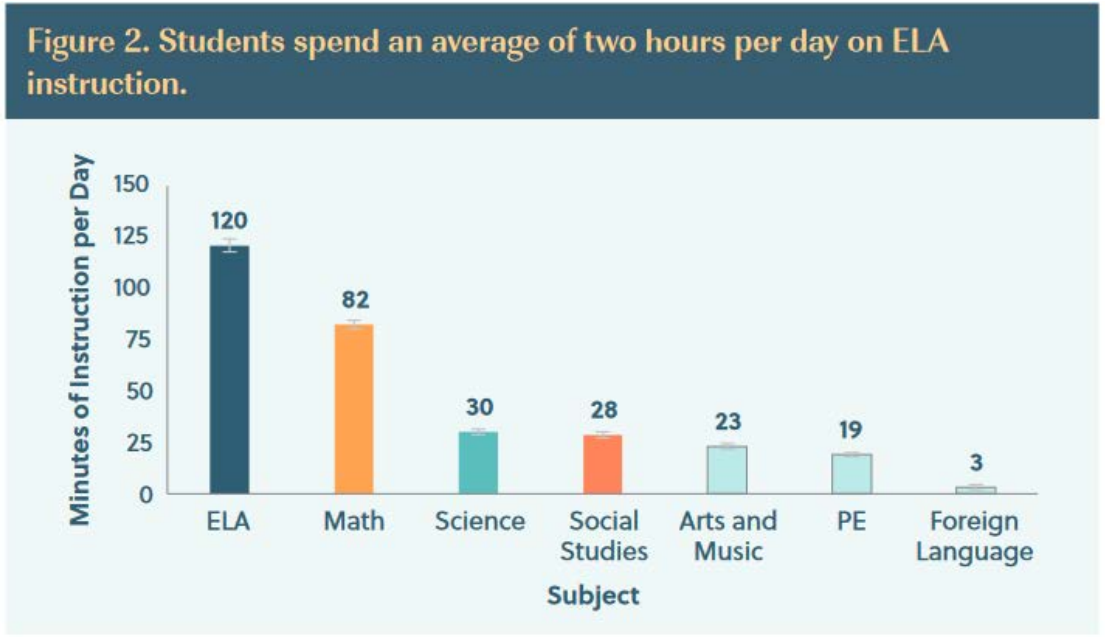
In one of the most [redacted] places in the world, the [redacted], a people have [redacted] over a [redacted] years. They are the [redacted]. For the [redacted], the [redacted] is a place [redacted] with life. Depending on how far north they live, the [redacted] find everything from [redacted] and [redacted] to [redacted].



The elementary curriculum

How much time do elementary students spend each day on …

- ELA?
- Math?
- Science?
- Social Studies?
- Arts?



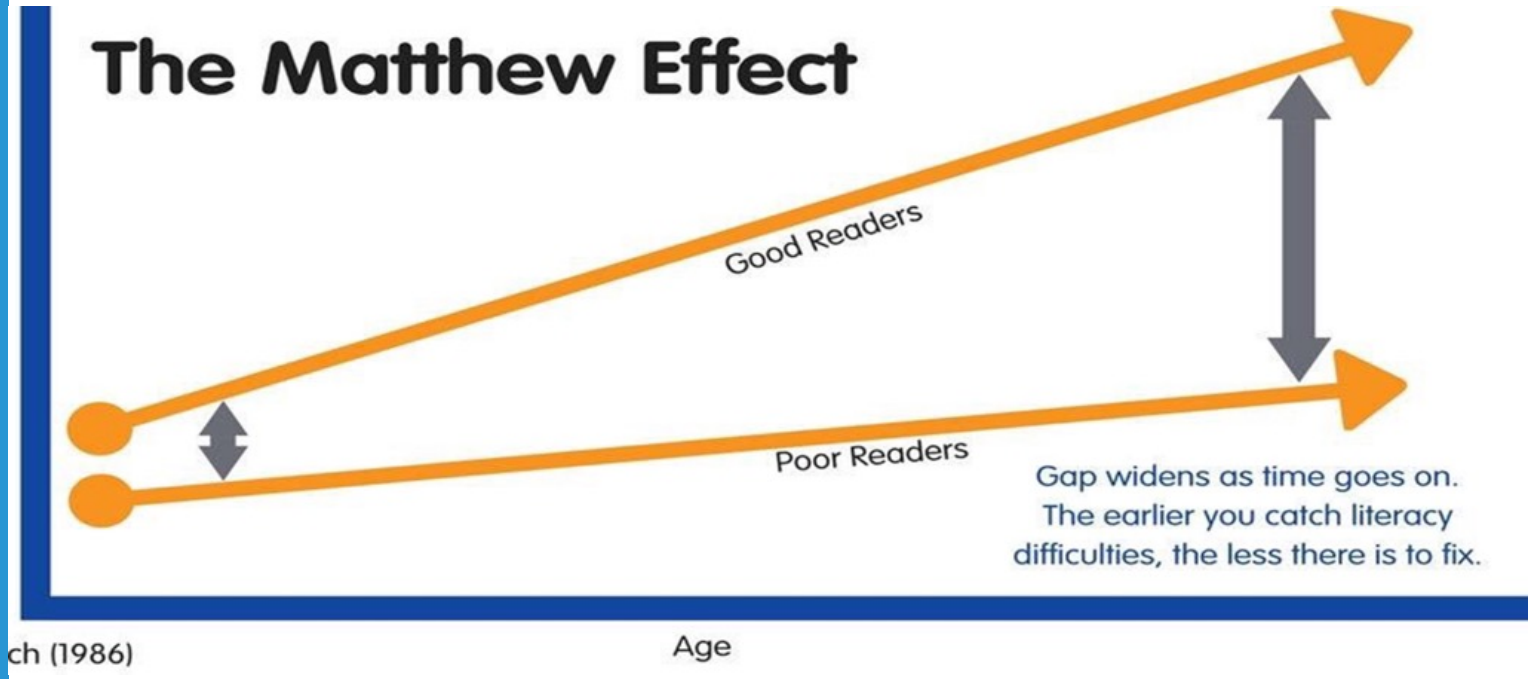
Source: Adam Tyner and Sarah Kabourek. Social Studies Instruction and Reading Comprehension: Evidence from the Early Childhood Longitudinal Study. Washington D.C.: Thomas B. Fordham Institute (September 2020). (Based on data for students who started K in 2010-11.)

Knowledge also helps you retain *new* information.

A problem: It can *look* like the "skills and strategies" approach is working at lower grade levels …

But the approach can backfire when students reach upper grades.

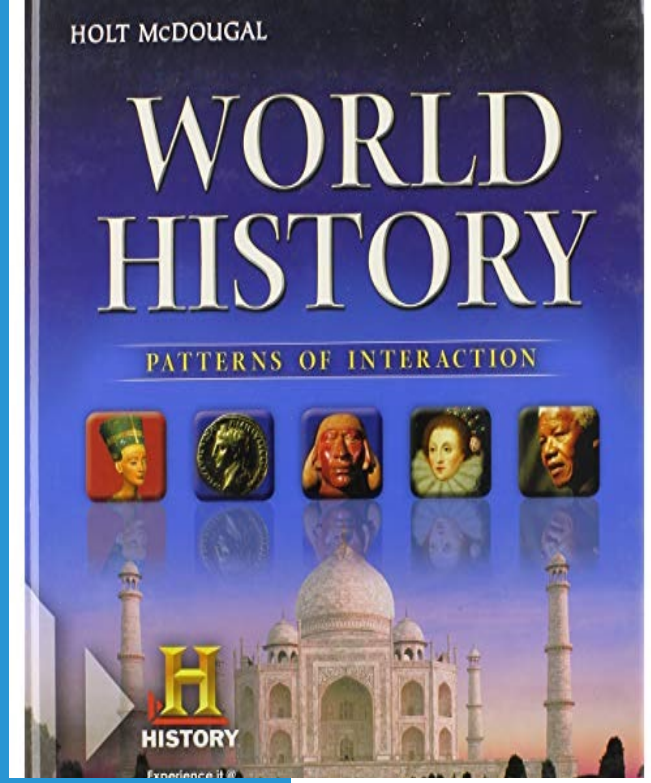
The gap between "good" and "poor" readers grows over time:

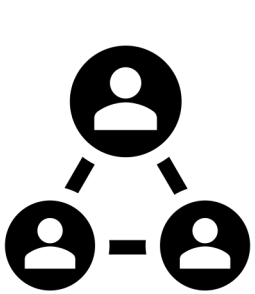


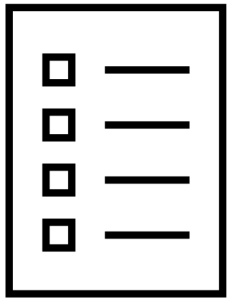
ch (1986)

A related gap:

The difference between what we assume high school students know and what many do know





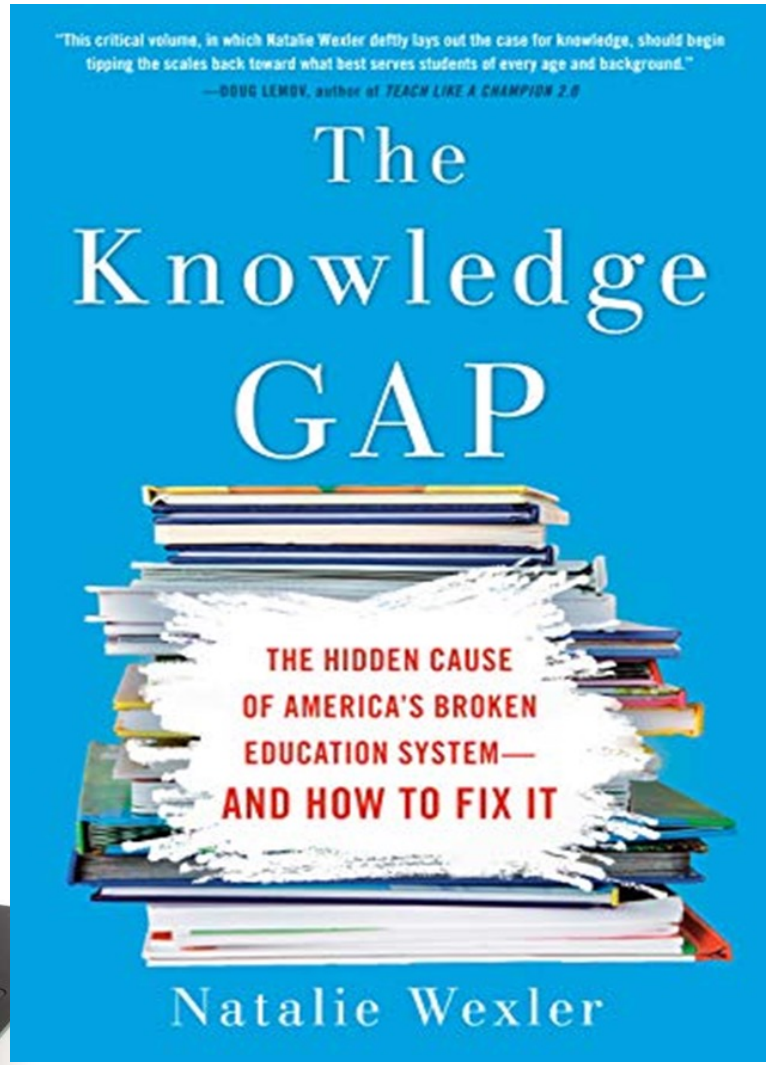


Part of released item from the SAT

25 The nature of impeachment: a narrowly channeled exception to the separation of powers maxim. The Federal Convention of 1787 said that. It limited impeachment to high crimes and misdemeanors, and discounted and opposed the term "maladministration." "It is to be used only for great misdemeanors," so it was said in the North Carolina ratification convention. And in the Virginia ratification convention:
30 "We do not trust our liberty to a particular branch. We need one branch to check the other."

With remote and hybrid learning …

the situation has become more urgent than ever.



Where can we go from here?

What can individual teachers do to narrow the knowledge gap?

1. Organize read-alouds by topic, not skill.
2. Ask questions that put content in the foreground.
3. Organize classroom libraries by topic.
4. Spend lots of time on meaty social studies & science topics.
5. Have students *write* about what they're learning.

What can administrators and policymakers do?

Adopt a content-focused elementary literacy curriculum that goes deeply into topics in …

How a knowledge-building curriculum can modulate cognitive load and boost student learning

Listening Speaking → Reading Writing




An effective curriculum will:

(1) focus on content & spend at least 2-3 weeks on a single topic
(2) give all students access to the same complex text (through read-alouds & discussion)
(3) engage students in listening, speaking, reading and writing about the SAME content.

Literacy develops along two separate tracks that ultimately converge.

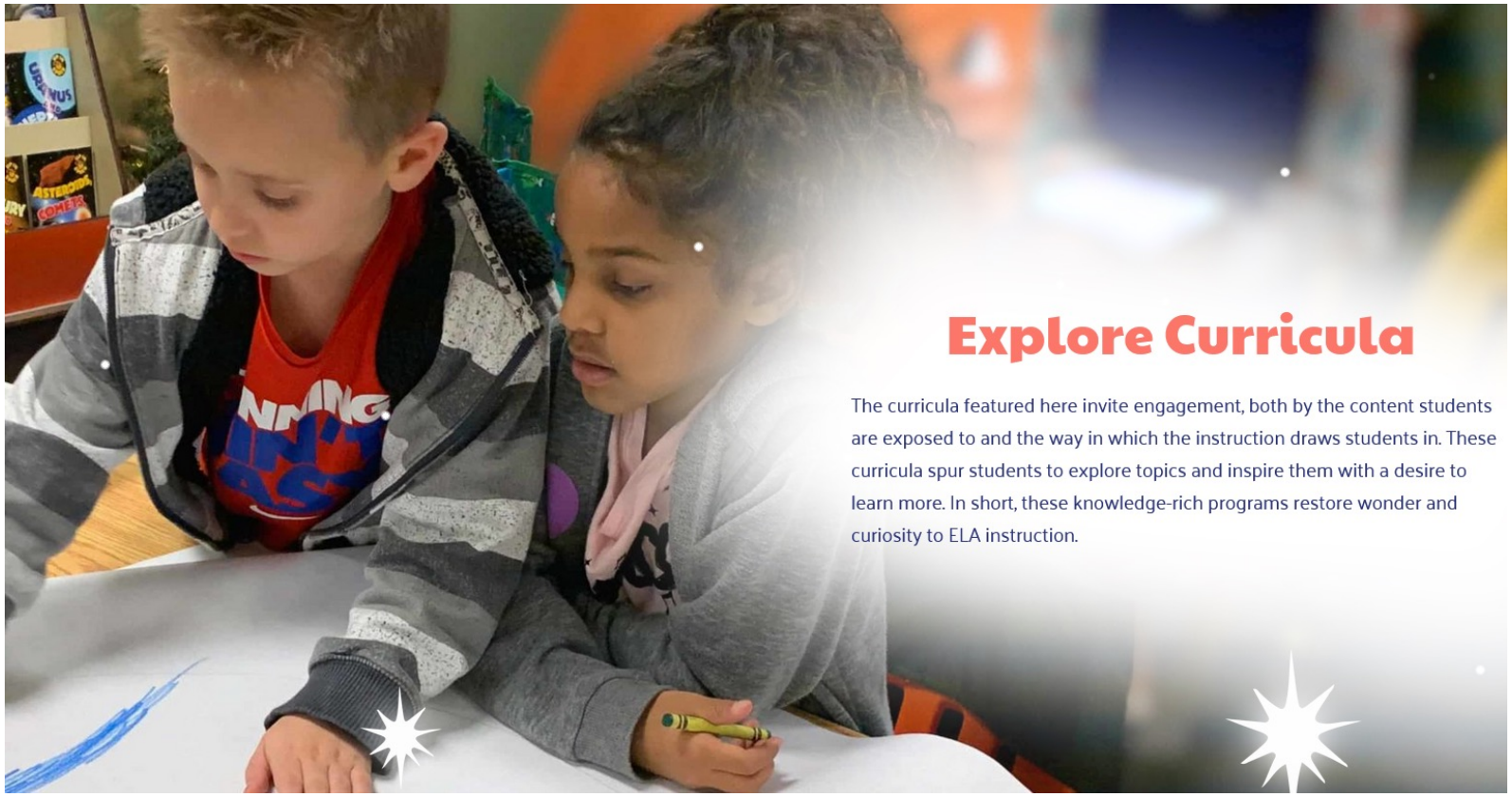
Build foundational skills through systematic instruction and practice.

Build knowledge, vocabulary, and familiarity with complex syntax *primarily* through read-alouds and discussion.

Eventually, students will draw on the knowledge they've acquired through listening/discussion to read and write at a higher level.

To find knowledge-building curricula, check out the Knowledge Matters Campaign:

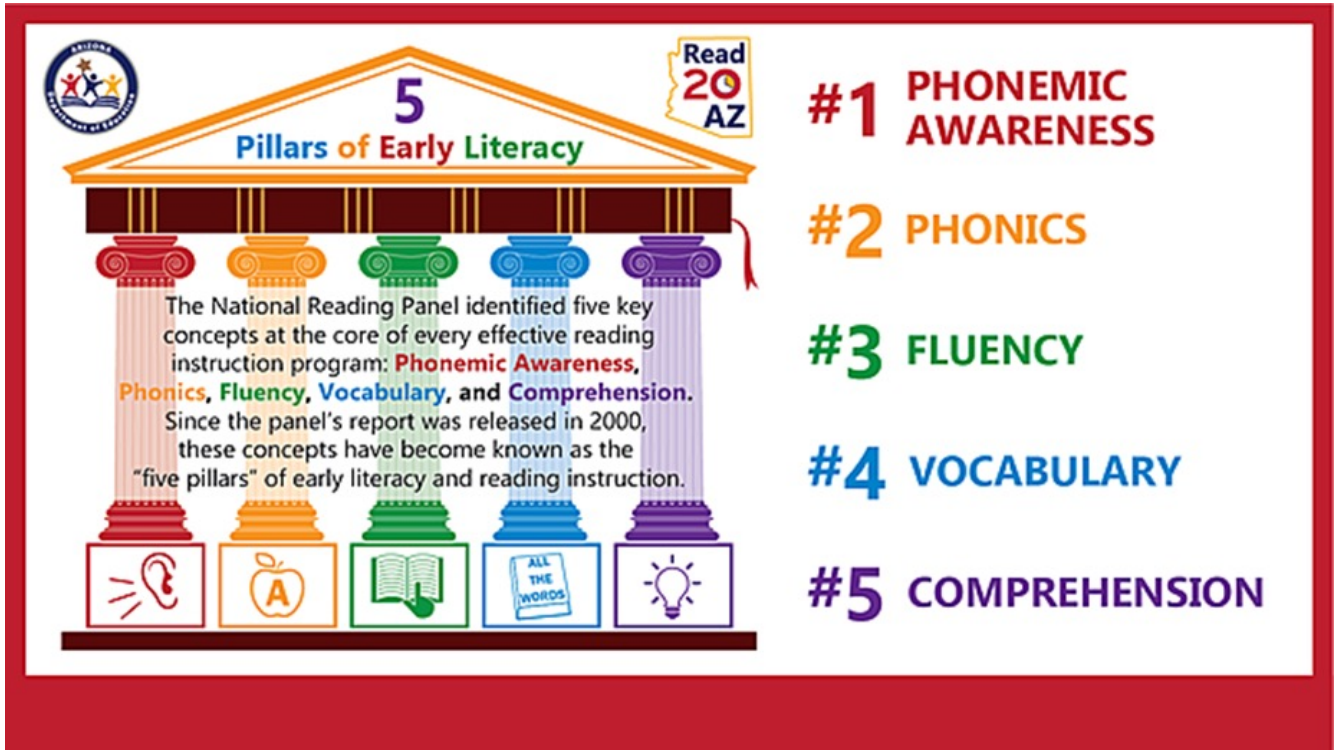
knowledgematterscampaign.org



Let's revisit those reading infographics …

- Possible misinterpretation?
- Reading comprehension requires more than understanding SPOKEN language.
- Why?
- Written language is more *complex* than spoken language.

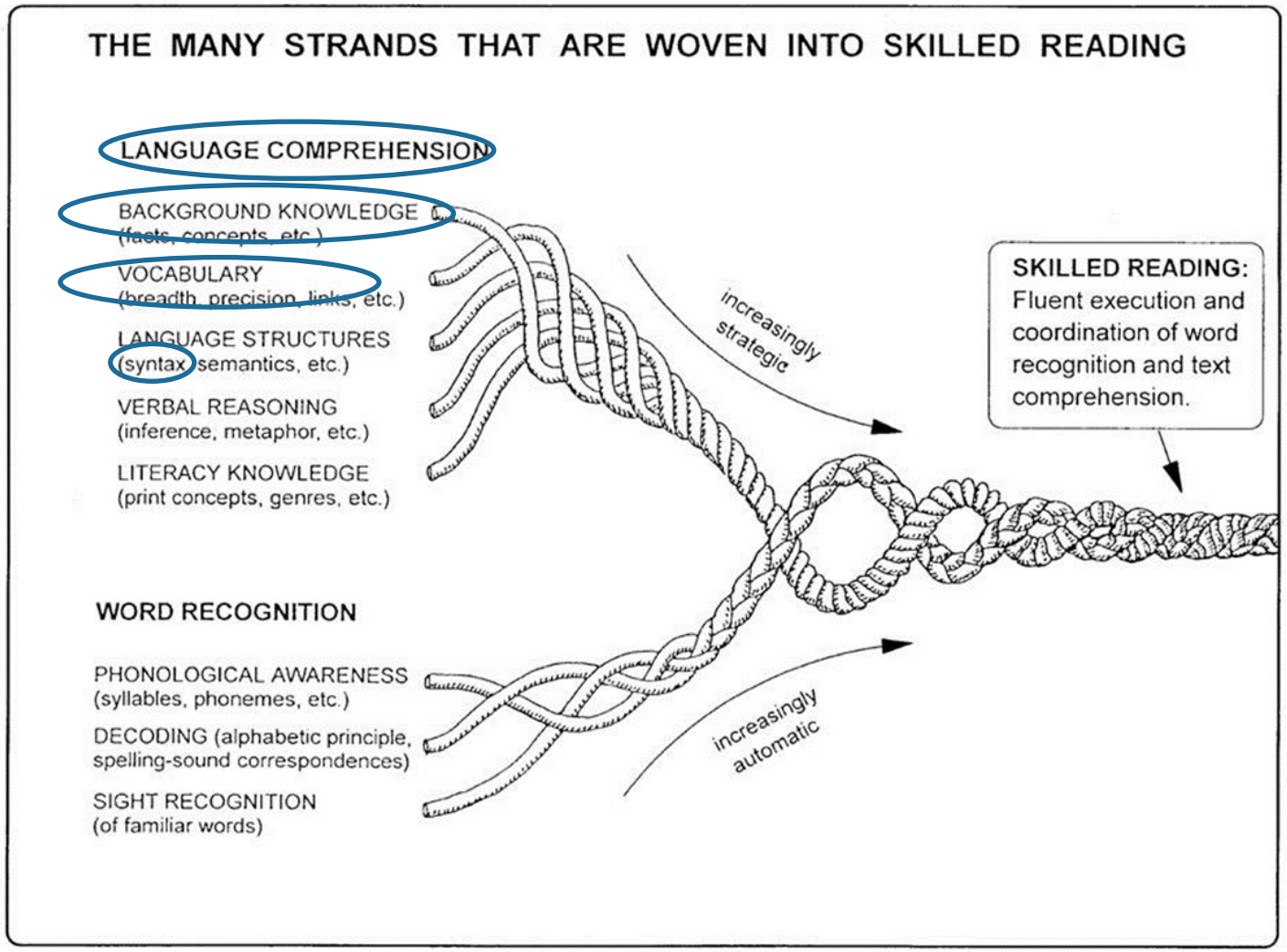
Possible misinterpretations?



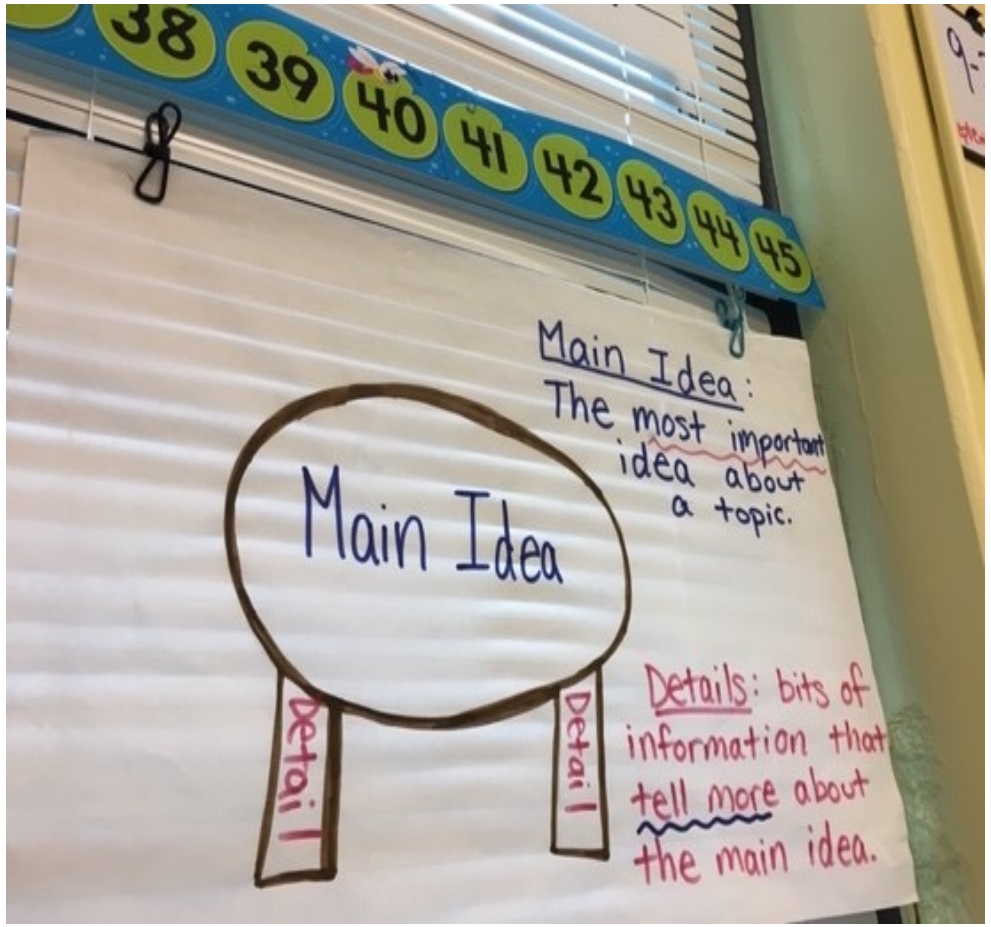
- Gives the impression that comprehension should be taught as a skill, like phonics
- Written Omits any mention of the role of background knowledge in comprehension

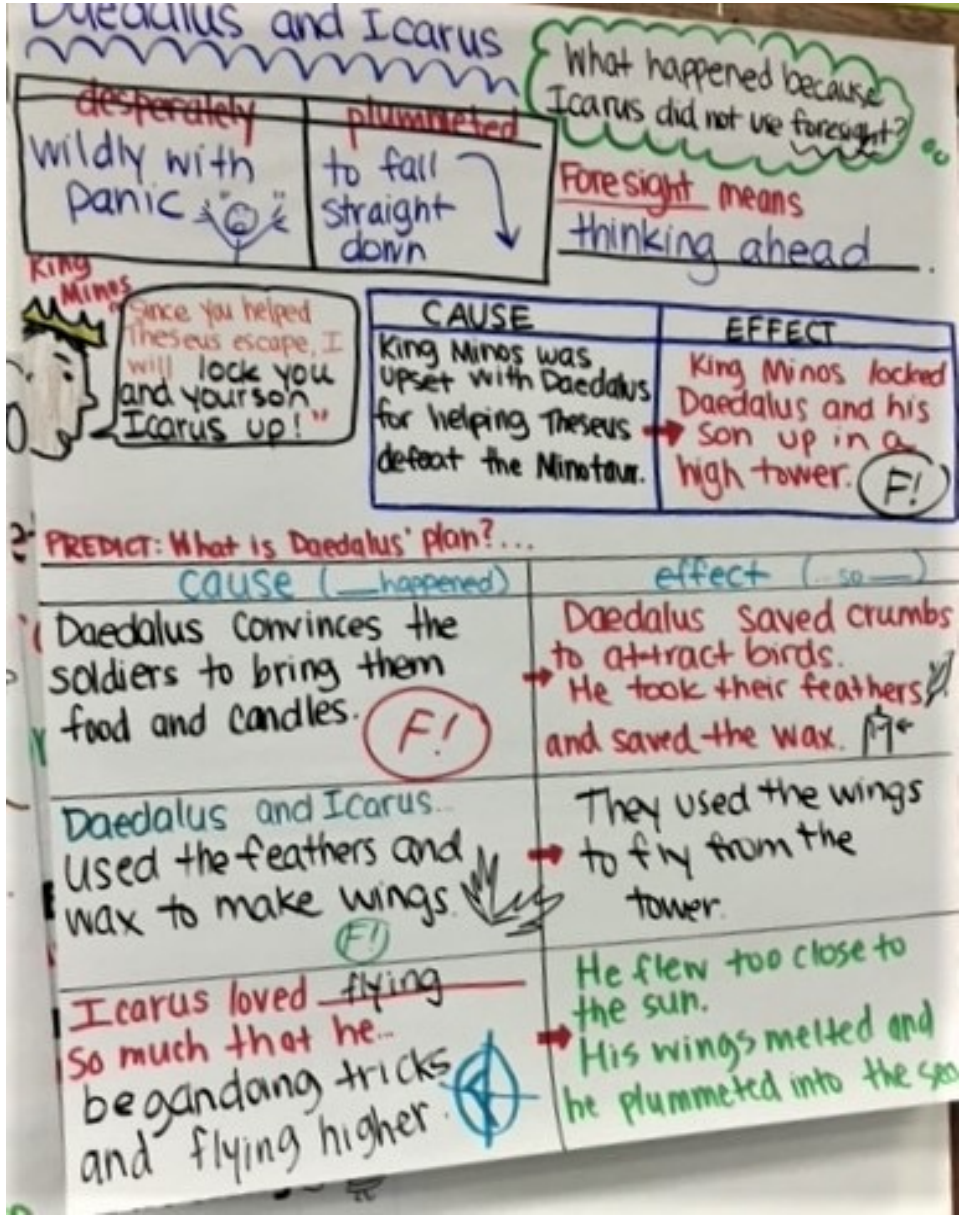
Possible misinterpretations

- “Vocabulary” aren’t really separate.
- Kids may not have relevant background knowledge to “activate.”
- Quick injections of background knowledge won’t stick.
- The best way to teach syntax is through *writing* instruction.

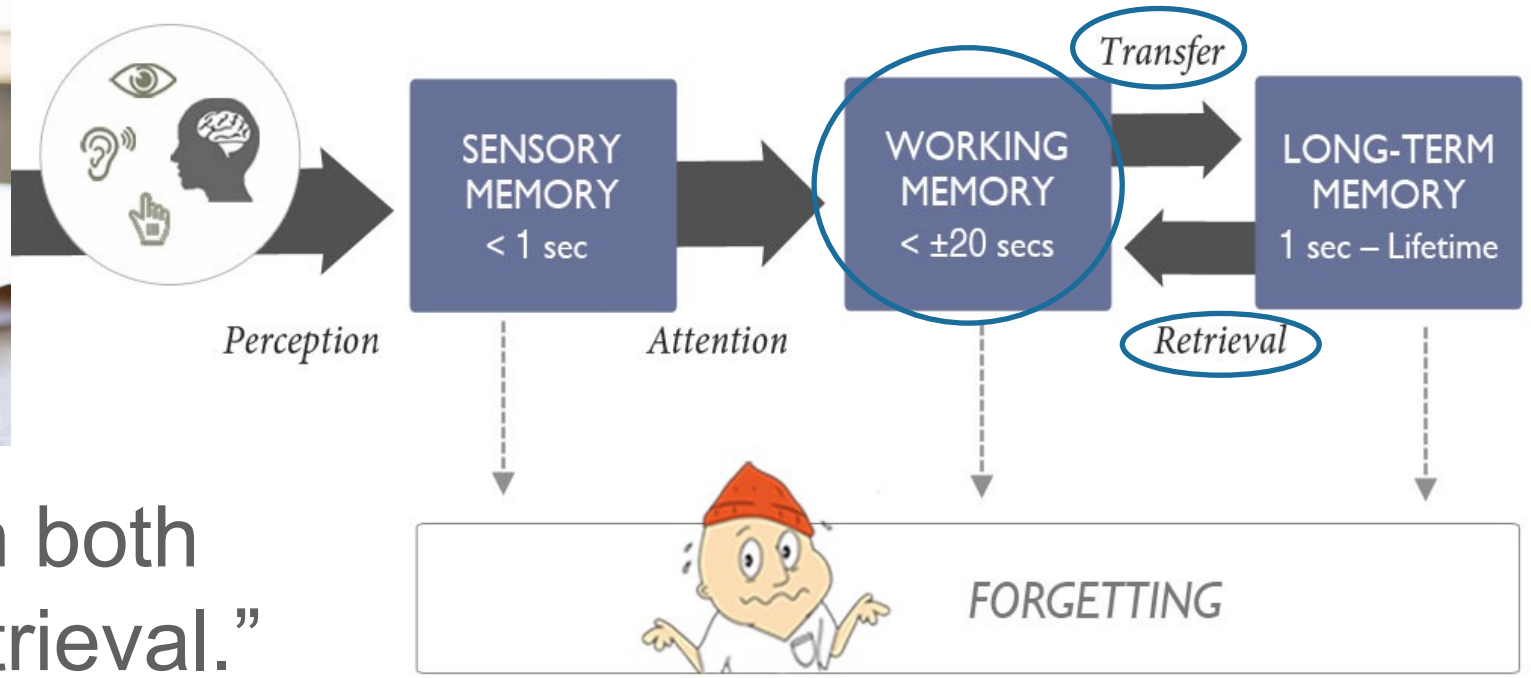


A tale of two classrooms





Writing can be a powerful lever for building knowledge



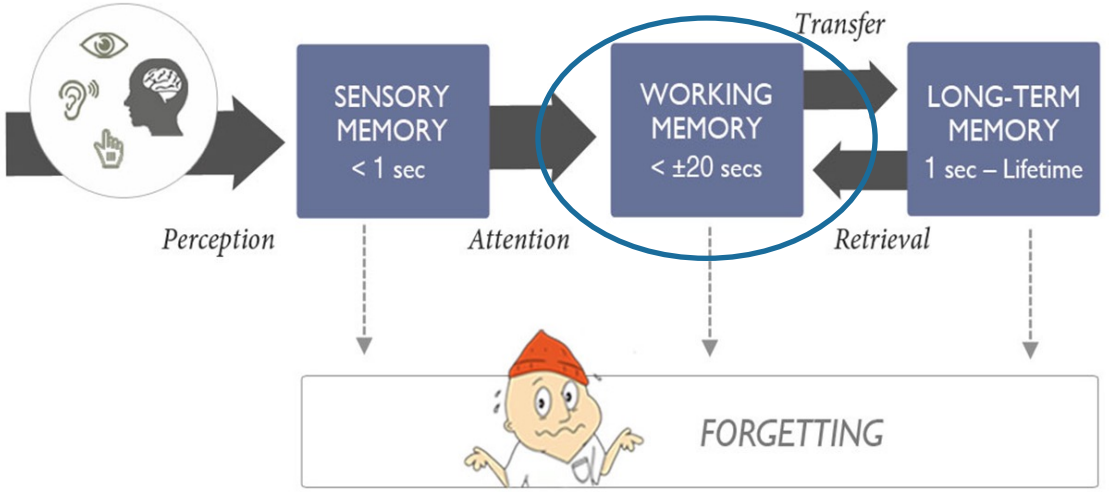
Writing helps with both "transfer" and "retrieval."

Writing can help compensate for missing “Velcro”—even at higher grade levels.

But it's also the hardest thing we ask students to do.

Inexperienced writers may be juggling:

- Letter formation
- Spelling
- Word choice
- Organization
- Content
- The peculiar syntax & vocabulary of written language
- All of this creates "cognitive load" — and stress



"Cognitive load" = the burden placed on working memory

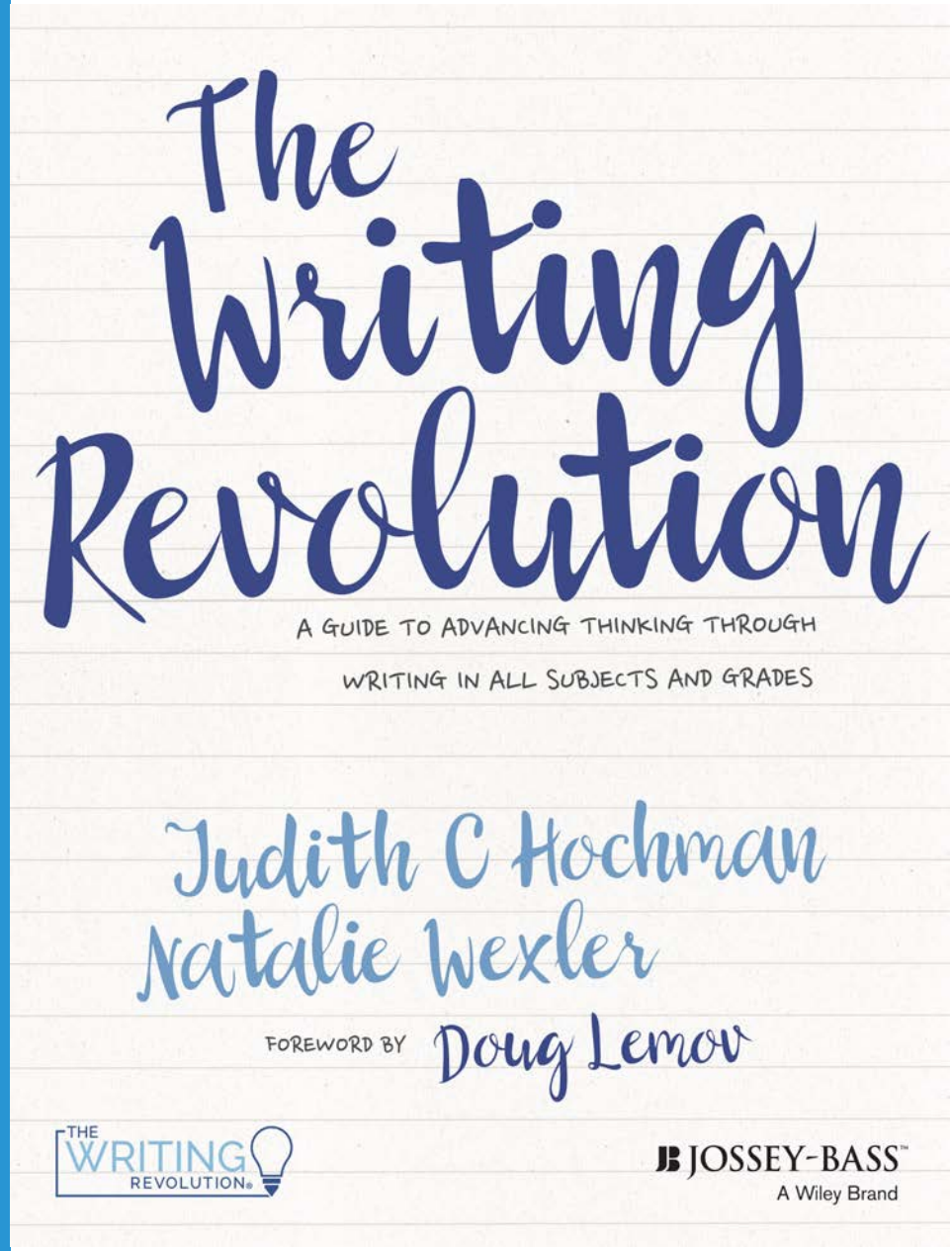
Writing instruction has enormous potential power.

BUT we have:

1. Underestimated how hard it is
2. Tried to teach it in isolation from content

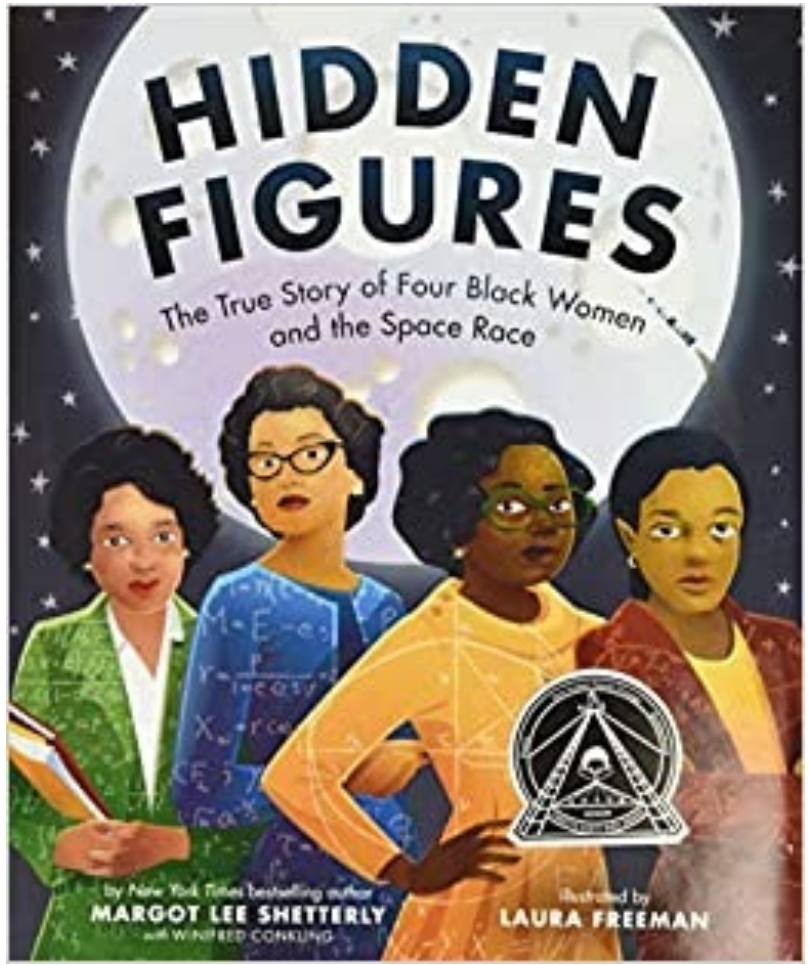
To unlock the power of writing, we need to:

1. Modulate cognitive load
2. Teach grammar/conventions in the context of students' own writing
3. Embed writing activities in the content of the curriculum



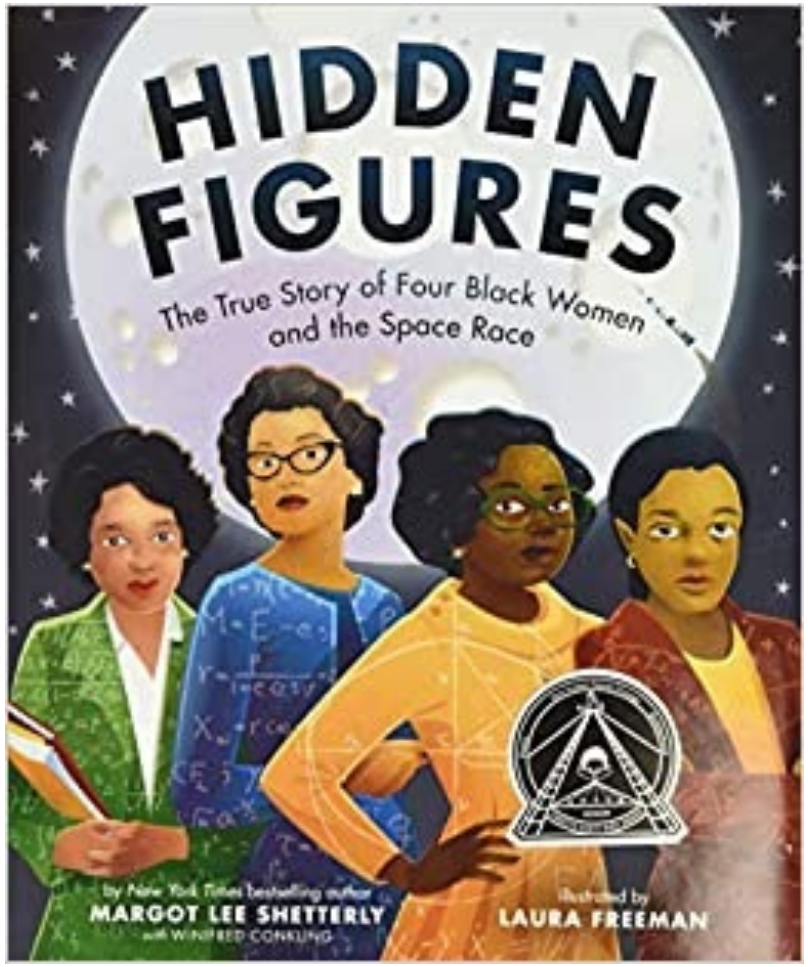
Conjunctions: Because, But, and So

- Dorothy Vaughan was a computer at NASA because _____.
- Dorothy Vaughan was a computer at NASA, but _____.
- Dorothy Vaughan was a computer at NASA, so _____.



Possible responses

- Dorothy Vaughan was a computer at NASA because she was very good at math.
- Dorothy Vaughan was a computer at NASA, but she was not allowed to use the whites-only bathrooms there.
- Dorothy Vaughan was a computer at NASA, so she worked on experiments to make planes safer.



Writing can build knowledge across the curriculum—e.g., in math

- Fractions are like decimals because they are all parts of wholes.
- Fractions are like decimals, but they are written differently.
- Fractions are like decimals, so they can be used interchangeably.

$$0.25 = \frac{1}{4}$$

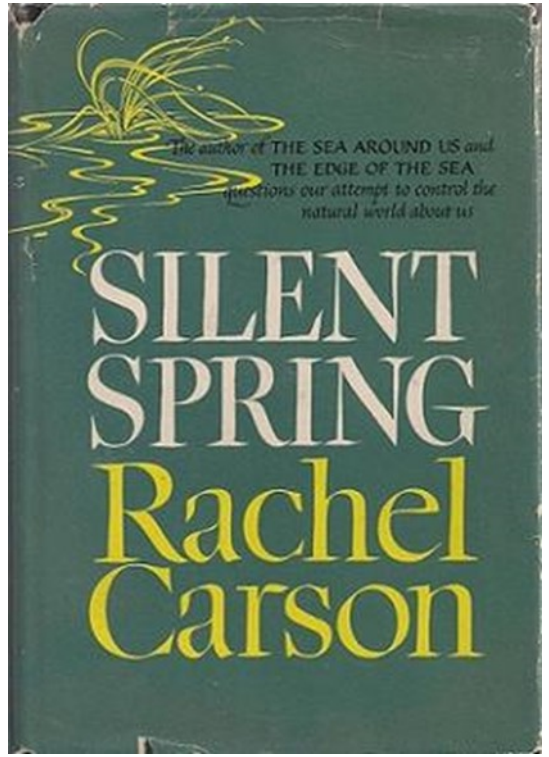
Sentence-level activities can boost writing skill, reading comprehension AND build knowledge—simultaneously.

"Rachel Carson, who was a scientist, writer, and ecologist, grew up in the rural river town of Springdale, Pennsylvania."

Student: "They grew up together in Pennsylvania."

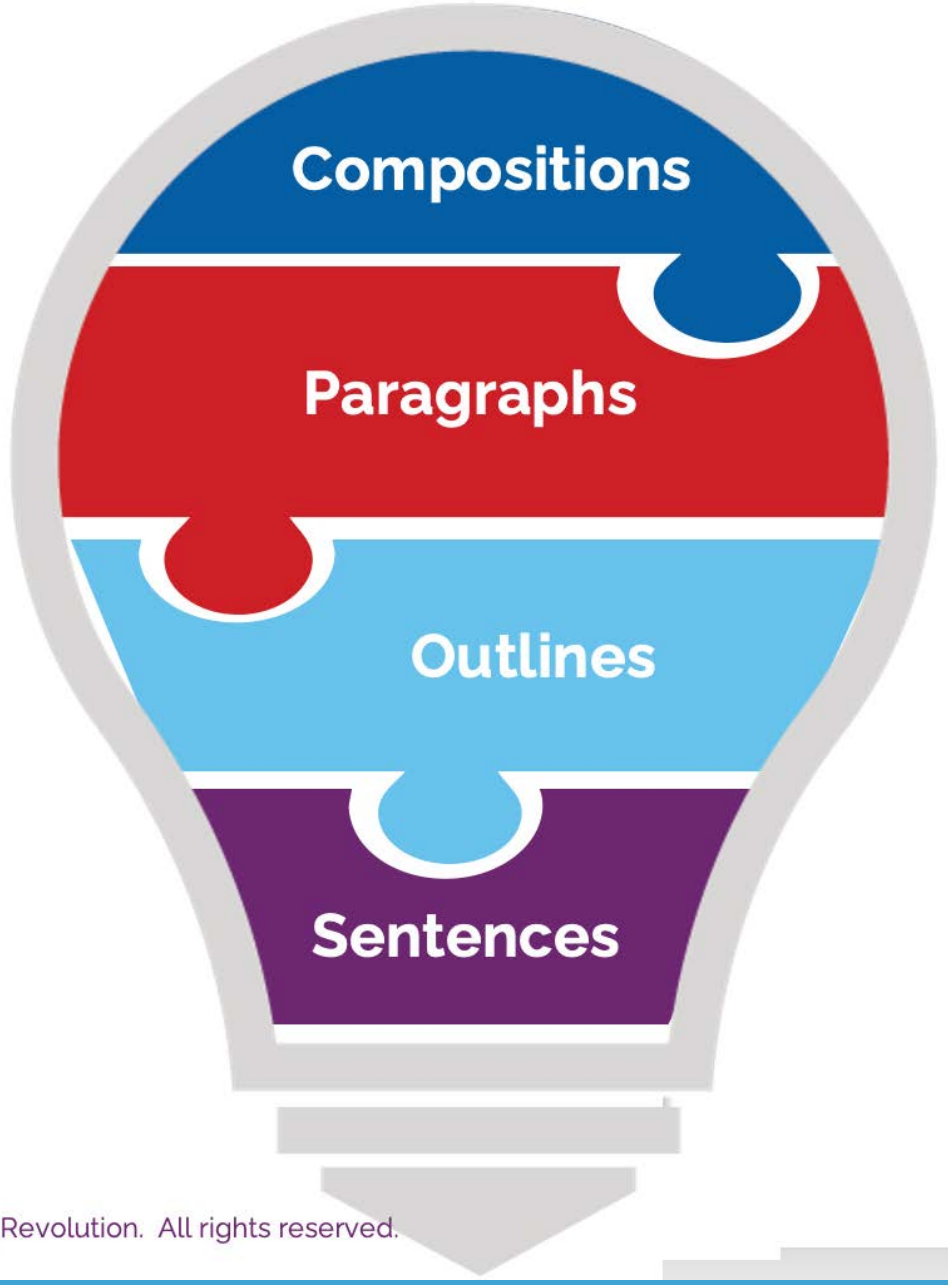
The solution:

- Teach students what an appositive is (a phrase describing a noun), using familiar content.
- After students have learned about Rachel Carson, give them this sentence to complete:
- Rachel Carson, _____, grew up in Springdale, Pennsylvania.

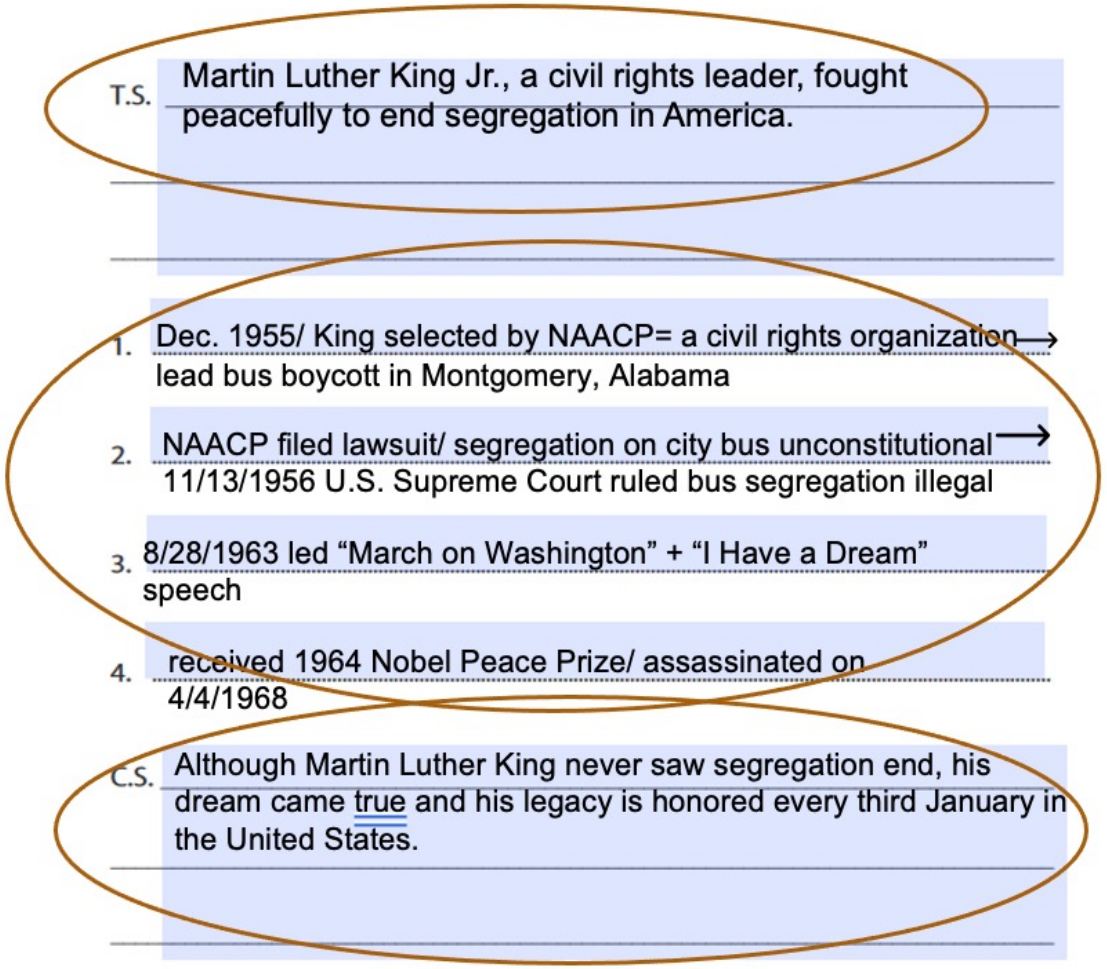


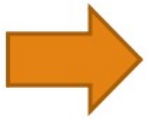
This method goes beyond sentences

But sentence-level work lays the foundation for lengthier independent writing.



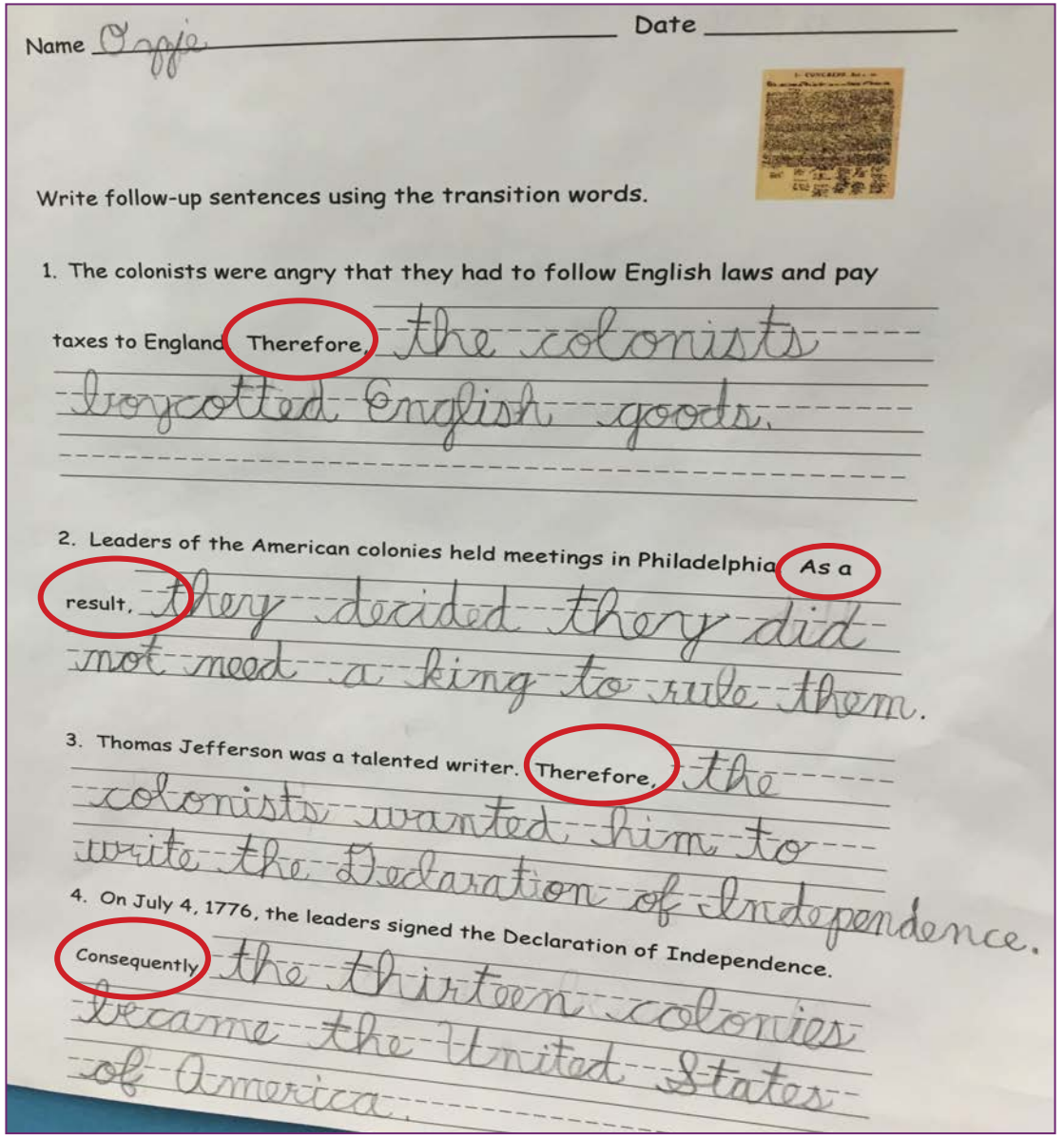
Single-Paragraph Outline ⟶ Paragraph





Martin Luther King Jr., a civil rights leader, fought peacefully to end segregation in America. In December of 1955, King was selected by the National Association for the Advancement of Colored People (NAACP), a civil rights organization, to lead a bus boycott in Montgomery, Alabama. In addition, the NAACP filed a lawsuit arguing segregation on a city bus was unconstitutional. As a result, on November 13, 1956, the U.S. Supreme Court ruled bus segregation was illegal. On August 28, 1963, King led a demonstration known as the "March on Washington" and gave his famous "I Have a Dream" speech. Furthermore, he received the 1964 Nobel Peace Prize. Sadly, King was assassinated on April 4, 1968. Although Martin Luther King never saw segregation end, his dream came true and his legacy is honored every third January in the United States.

How sentence-level activities lay the groundwork for longer writing—while building knowledge



Name Oaje Date

Write follow-up sentences using the transition words.

1. The colonists were angry that they had to follow English laws and pay taxes to England. Therefore, the colonists boycotted English goods.

2. Leaders of the American colonies held meetings in Philadelphia. As a result, they decided they did not need a king to rule them.

3. Thomas Jefferson was a talented writer. Therefore, the colonists wanted him to write the Declaration of Independence.

4. On July 4, 1776, the leaders signed the Declaration of Independence. Consequently the thirteen colonies became the United States of America.

The better way to teach comprehension strategies: **explicit writing instruction**

- Finding the main idea and supporting details
- Making inferences
- Comparing & contrasting
- Etc.

Why is it better?

- The content is necessarily in the foreground
- You can tell if students are “getting it.”
- You’re reaching EVERY student.

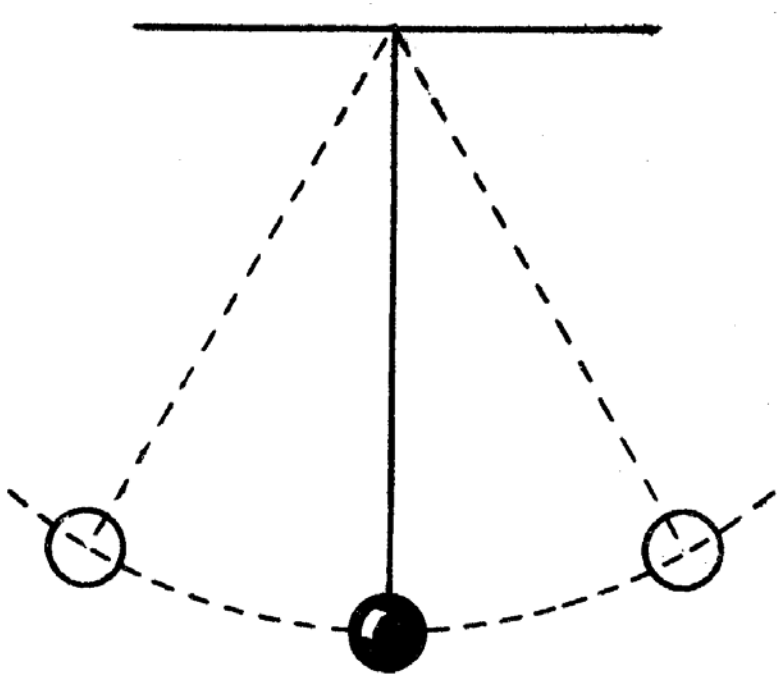
Effective writing instruction can turbocharge any content-rich curriculum.

But if the curriculum is focused on comprehension skills, it won't work.

If we don’t build foundational skills, knowledge, and writing ability simultaneously …

Many students will not become fully literate …

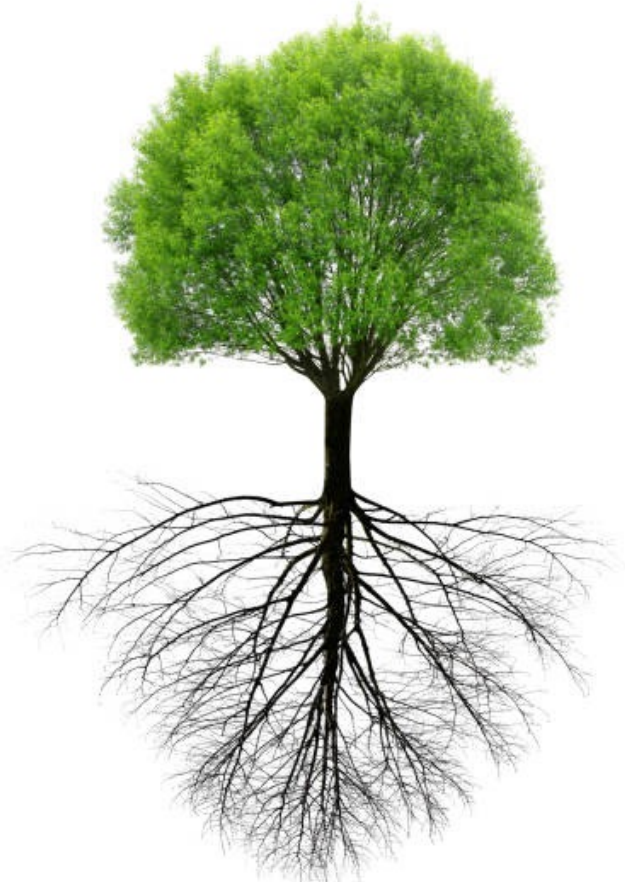
And the pendulum may swing away from phonics once again.



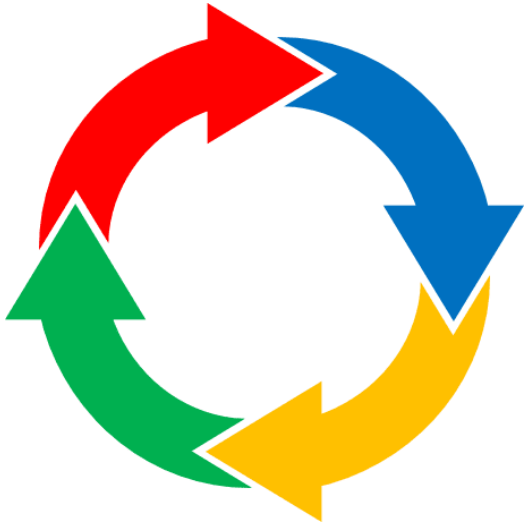
Curriculum is the place to start … but it's not enough.

Possible obstacles to change

To be effective, PD should be rooted in the content of the curriculum …



Be ongoing and cyclical …



And enable teachers to understand not just HOW to change their practice but also WHY it's important.

The Power of Knowledge-Building Curriculum

To sum up …

- The “science of reading” requires us to change more than our approach to decoding instruction.
- Schools need to adopt a knowledge-building curriculum that begins in kindergarten and connects listening, speaking, reading, and writing.
- Writing should be taught explicitly, beginning at the sentence level.
- Educators need ongoing support grounded in the specific content of the curriculum.
- A knowledge-building approach, combined with effective foundational skills instruction, can enable all students to reach their full potential and meet or exceed high expectations.

Learn the Science of Reading

- 7–10-week online course that teaches foundational skills and instructional practices based on the science of reading
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