



The Knowledge Gap: What It Is and How to Narrow It

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CHARLOTTESVILLE, VIRGINIA

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This presentation will cover:

- Why we need to change **more** than just our approach to decoding instruction if all students are to become fully literate.
- Why the current skills-focused approach to reading comprehension is **not** backed by scientific evidence.
- How a **knowledge-building approach** that **connects listening, speaking, reading, and writing** can enable all students to reach their full potential.



We've been hearing a lot lately about reading ...

AP, 4.20.23

An end to the reading wars? More US schools embrace phonics

By HEATHER HOLLINGSWORTH April 20, 2023

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.

Fox News, 5.14.23

Phonics can help our nation climb out of this literacy crisis:

APM, Emily Hanford



Wall Street Journal, 5.9.23

New York City Hopes Phonics Will Save It From National Reading Crisis

Nation's largest school district to upend reading curriculum, implement mandated lessons to reverse low literacy rates

NY Times, 12.25.22

In Memphis, the Phonics Movement Comes to High School

Literacy lessons are embedded in every academic class. Even in biology.

Washington Post, 3.11.22

THE POST'S VIEW

Opinion | Cut the politics. Phonics is the best way to teach reading.



By the Editorial Board

March 11, 2023 at 7:00 a.m. EST

“Science of Reading” infographics do *mention* comprehension ...

The Simple View of Reading

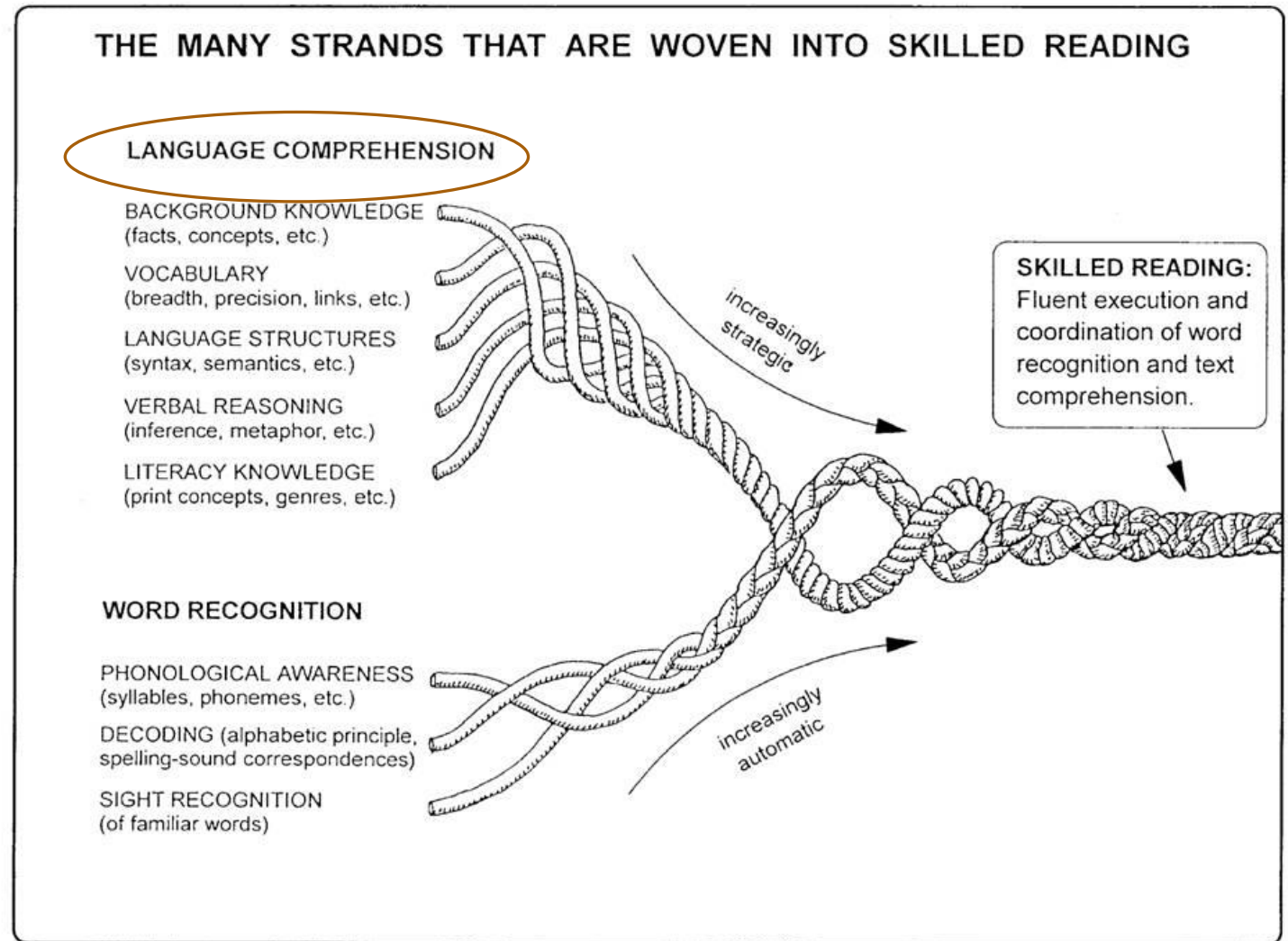


(Gough & Tunmer, 1986; Hoover & Gough, 1990)

The infographic is titled '5 Pillars of Early Literacy' and features a temple-like structure with five colorful pillars. The pillars are numbered 1 through 5, each with a corresponding icon: 1. Phonemic Awareness (ear), 2. Phonics (letter A), 3. Fluency (open book), 4. Vocabulary (book with 'ALL THE WORDS'), and 5. Comprehension (lightbulb). The fifth pillar is circled in orange. Text in the center states: 'The National Reading Panel identified five key concepts at the core of every effective reading instruction program: **Phonemic Awareness, Phonics, Fluency, Vocabulary, and Comprehension.** Since the panel's report was released in 2000, these concepts have become known as the "five pillars" of early literacy and reading instruction.' Logos for 'Read 20 AZ' and 'Arizona Department of Education' are also present.

- #1 PHONEMIC AWARENESS
- #2 PHONICS
- #3 FLUENCY
- #4 VOCABULARY
- #5 COMPREHENSION

The “Reading Rope”



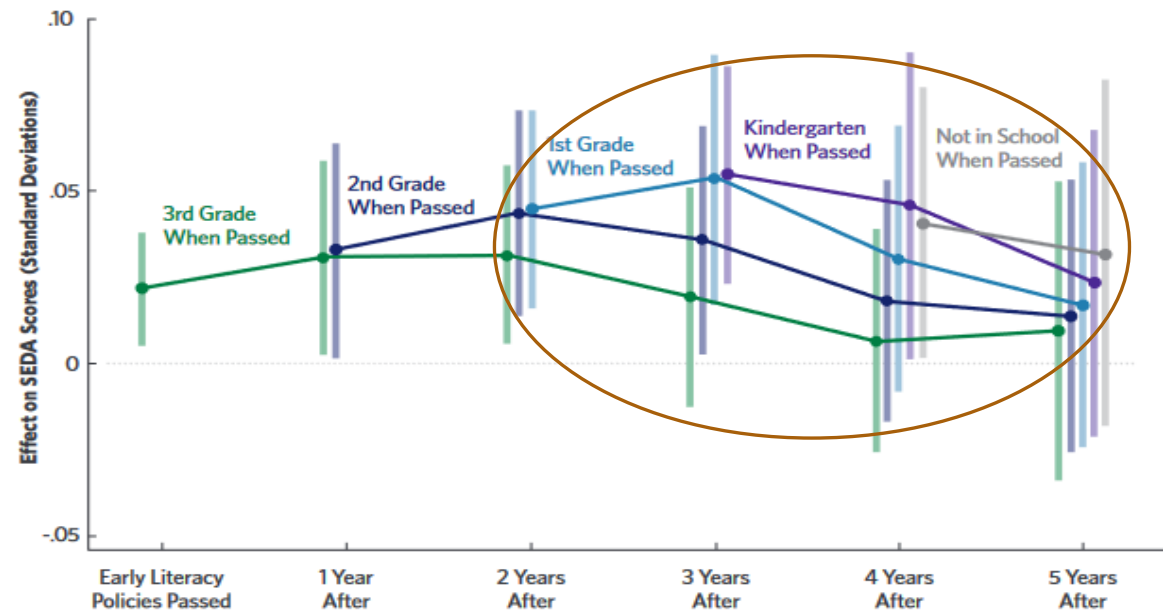
Scarborough, H. S. (2001). Connecting early language and literacy to later reading (dis)abilities: Evidence, theory, and practice. In S. Neuman & D. Dickinson (Eds.), *Handbook for research in early literacy* (pp. 97–110). New York, NY: Guilford Press.

Reading reform has focused on phonics.

The bump in test scores fades out after 5th grade.

Why?

FIGURE 2. Effect of Any Early Literacy Policies on High-Stakes Reading Scores



Note: Data are from overall average SEDA reading scores, 2009-2018. The figure only includes cohorts of students who were exposed to an early literacy policy in any of grades K-3. Each line in the figure represents the test score effects of early literacy policies for a particular cohort of students as they progress from 3rd to 8th grade. More information on the sample can be found in the full working paper.

Source: Westall and Cummings, The Effects of Early Literacy Policies on Student Achievement, Policy Brief, June 2023.

“The key finding is that adopting *any* early literacy policy improves elementary students’ reading achievement on high-stakes assessments, but those effects fade out by middle school.”

Amber Northern, PhD, Flypaper, 11.20.23

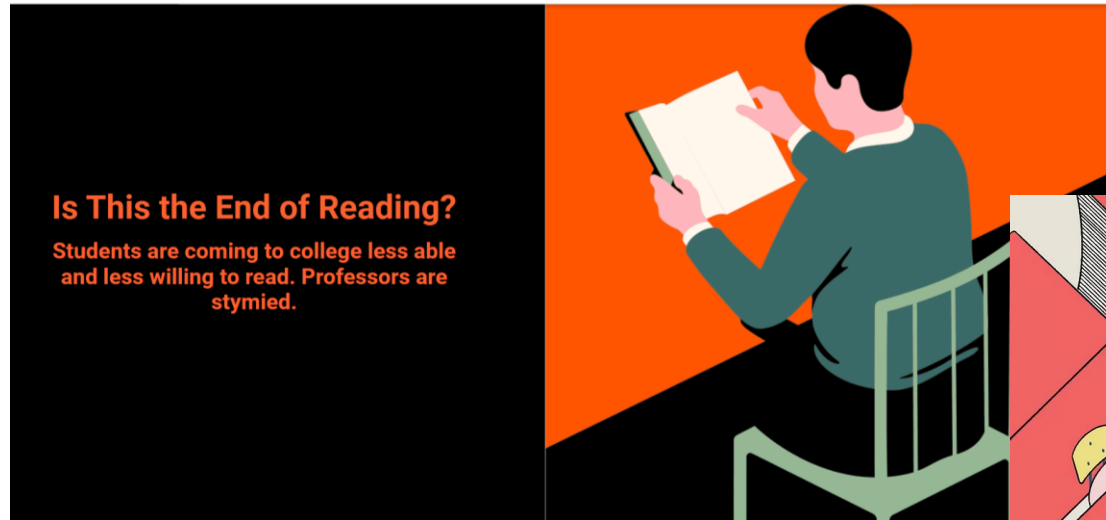
Also: kids aren't reading for fun as much as they used to.

- In 2023, only 14% of 13-year-olds in the U.S. read for fun “almost every day,” down from 27% in 2012—and from **35%** in 1984.
- 31% “never or hardly ever” read for fun, up from 22% in 2012—and from **8%** in 1984.

(Long-Term Trend NAEP, 2023)



College students aren't able or willing to do their assigned reading (or writing).



The Chronicle of Higher Education, 5.9.24



Illustration by Masha Krasnova-Shabova

EDUCATION
**THE ELITE COLLEGE
STUDENTS WHO CAN'T
READ BOOKS**
To read a book in college, it helps to have read a book in high school.
By Rose Horowitz

The Atlantic, October 1, 2024

Does all of this have something to do with our approach to reading comprehension?



Literal vs. Non-Literal Language, 3rd Grade Lesson



1. What did Amelia Bedelia do to Mrs. Roger's dress? _____

2. What phrase made her think that was the right thing to do? _____

3. What is a different way that Mrs. Rogers could have asked Amelia Bedelia to do what she wanted? _____

Students read a one-paragraph excerpt.

Source: <https://www.educationworld.com/sites/default/files/Literal-and-Nonliteral-Language-Amelia%20Bedelia-handout.pdf>

Is this the best way to introduce kids to the joy of reading?

COMPREHENSION

strategies vs. skills

- Using Schema
- Predicting
- Inferring
- Questioning
- Determining Importance
- Visualizing
- Synthesizing

- Main Idea & Details
- Author's Purpose
- Determining Theme
- Cause & Effect
- Summarize/Retell
- Sequence of Events
- Compare & Contrast
- Story Structure
- Classify & Categorize
- Fact & Opinion
- Drawing Conclusions
- Point of View
- Identifying Genre
- Describing Plot
- Making Predictions
- Figurative Language



The problem isn't just too much "test prep."

State ELA standards also list skills—not content.

STANDARD 3.6

STRAND: READING

GRADE LEVEL 3

- 3.6** **The student will continue to read and demonstrate comprehension of nonfiction texts.**
- a) Identify the author’s purpose.**
 - b) Use prior and background knowledge as context for new learning.**
 - c) Preview and use text features.**
 - d) Ask and answer questions about what is read.**
 - e) Draw conclusions based on text.**
 - f) Summarize major points found in nonfiction texts.**
 - g) Identify the main idea.**
 - h) Identify supporting details.**
 - i) Compare and contrast the characteristics of biographies and autobiographies.**
 - j) Use reading strategies to monitor comprehension throughout the reading process.**
 - k) Identify new information gained from reading.**
 - l) Read with fluency and accuracy.**

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+

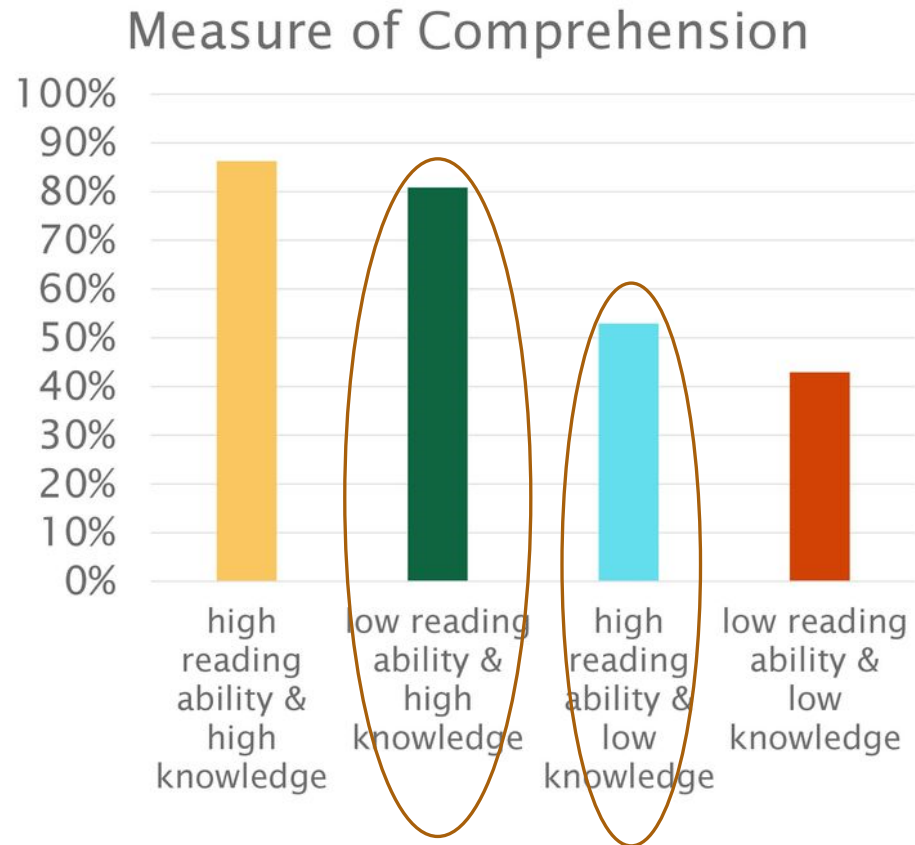


Leveled
Reading

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



The Baseball Study (Recht and Leslie, 1988)

This study and many others show:

- Comprehension “skills” 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?")

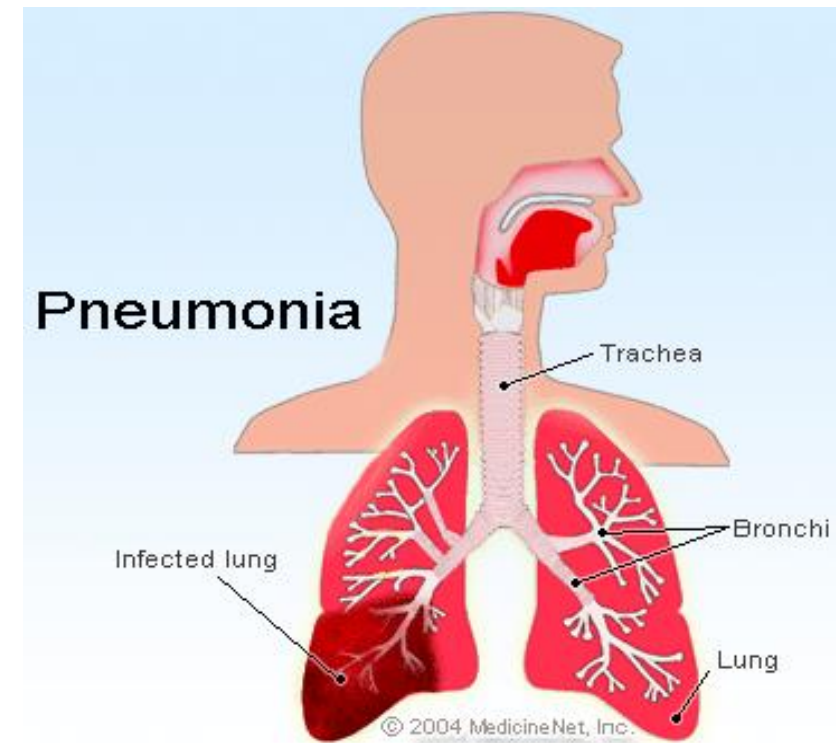
AND

2. General reading comprehension

Which suggests that ...

To boost reading comprehension, kids need to acquire as much academic knowledge and vocabulary as possible.

But that's not all ...



Syntax and Reading Comprehension

“Rachel Carson, a scientist, writer, and ecologist, grew up in the rural river town of Springdale, Pennsylvania.”

Researcher: “What do you know about Rachel Carson now?”

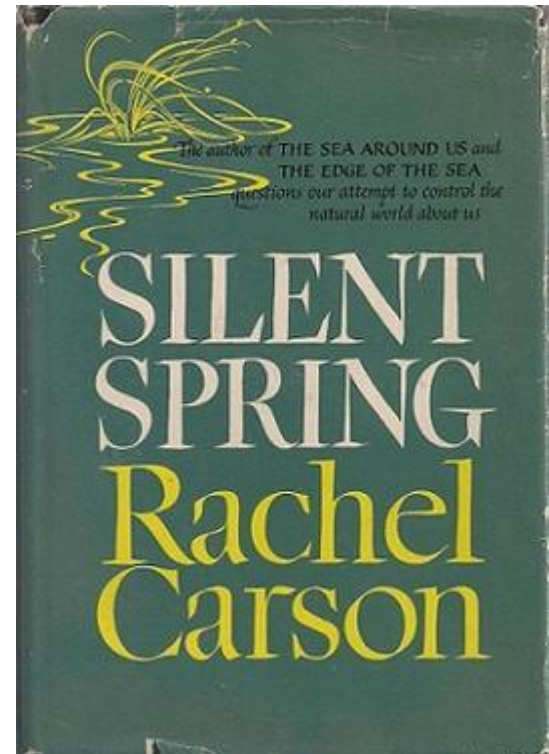
Student: “They grew up together in the same place.”

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

Long-term, large-scale study:

Fewer than 10% of 8th-graders can “evaluate complex syntax.”

Reardon, Valentino & Shores 2012 (ECLS-K data)



Knowledge of the topic may not ensure comprehension.

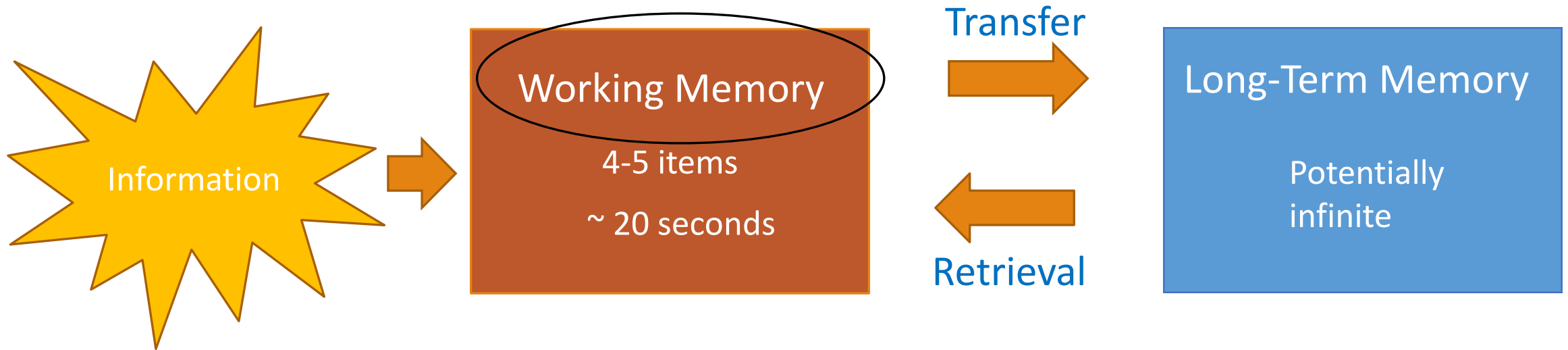
Much depended on the two overnight batsmen. But this duo perished either side of lunch—the latter a little unfortunate to be adjudged leg-before—and with Andrew Symonds, too, being shown the dreaded finger off an inside edge, the inevitable beckoned, bar the pyrotechnics of Michael Clarke and the ninth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

GENERAL knowledge of vocabulary and syntax is the goal.

But: the only way to acquire that knowledge is through knowledge of TOPICS.



Why knowledge helps with comprehension:



The burden on working memory = “cognitive load”

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.

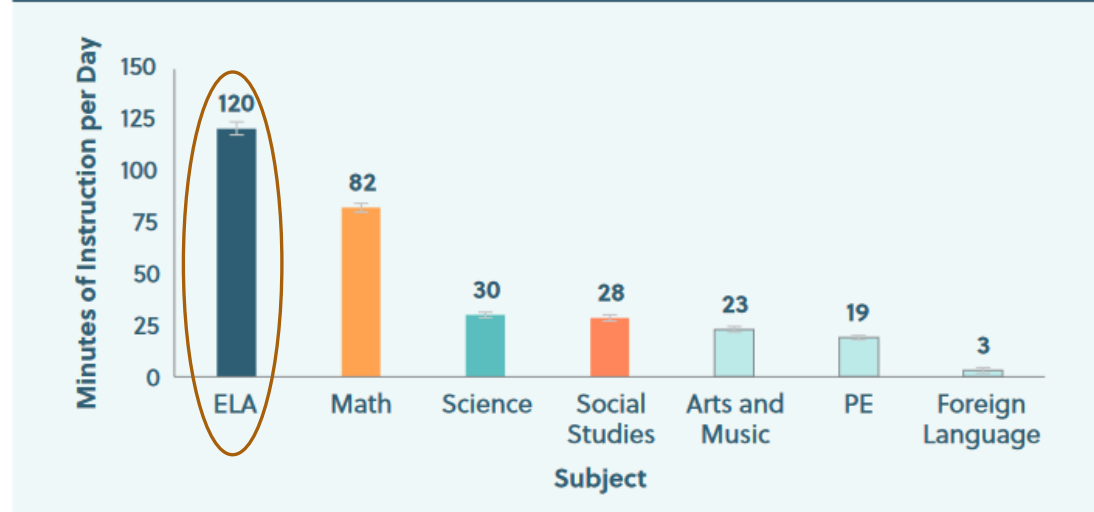
In one of the most [redacted] places in the world,
the [redacted], a people have [redacted] over
a [redacted] years. They are the [redacted]. For the
[redacted], the [redacted] is a place [redacted] with life.
Depending on how far north they live, the [redacted]
find everything from [redacted] [redacted]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

The Elementary Curriculum

How much time do U.S. elementary students spend each day on ...

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

Figure 2. Students spend an average of two hours per day on ELA instruction.

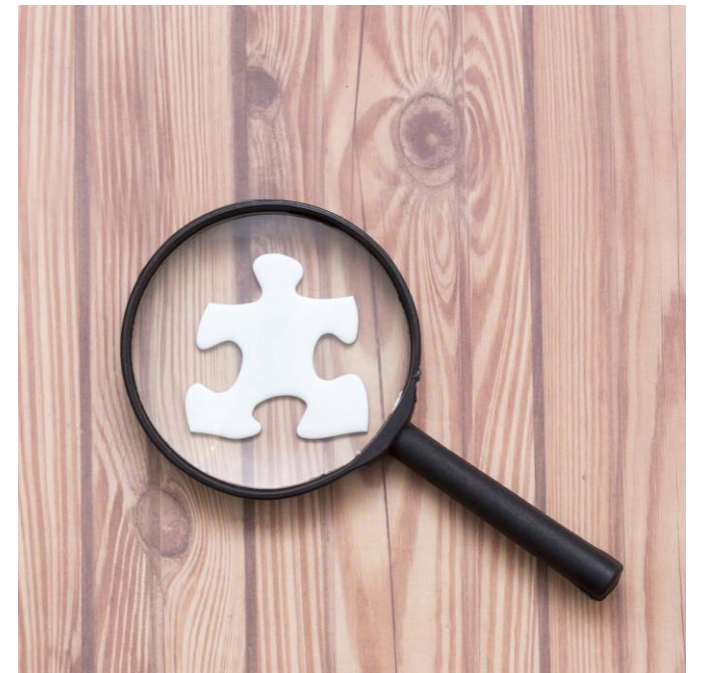


Note: The figure contains pooled averages of grades 1 through 5. The mean total instructional time is 302 minutes per day. Analytic sample includes 6,829 students. "Arts and music" includes art, music, dance, and theater. Error bars represent 95 percent confidence intervals.

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.)

Going Deeper into the Data

- Extra half-hour a day of social studies: higher reading test scores in 5th grade
- Extra half-hour a day of ELA/reading: no increase in reading test scores
- Students from the lowest SES: biggest boost from more social studies
- Students from highest SES: no significant boost from more social studies



This approach to teaching reading has a negative impact on ALL children, but its impact falls hardest on:

- Kids who struggle with decoding
- Kids with less academic knowledge and vocabulary
- Kids who fall into both categories

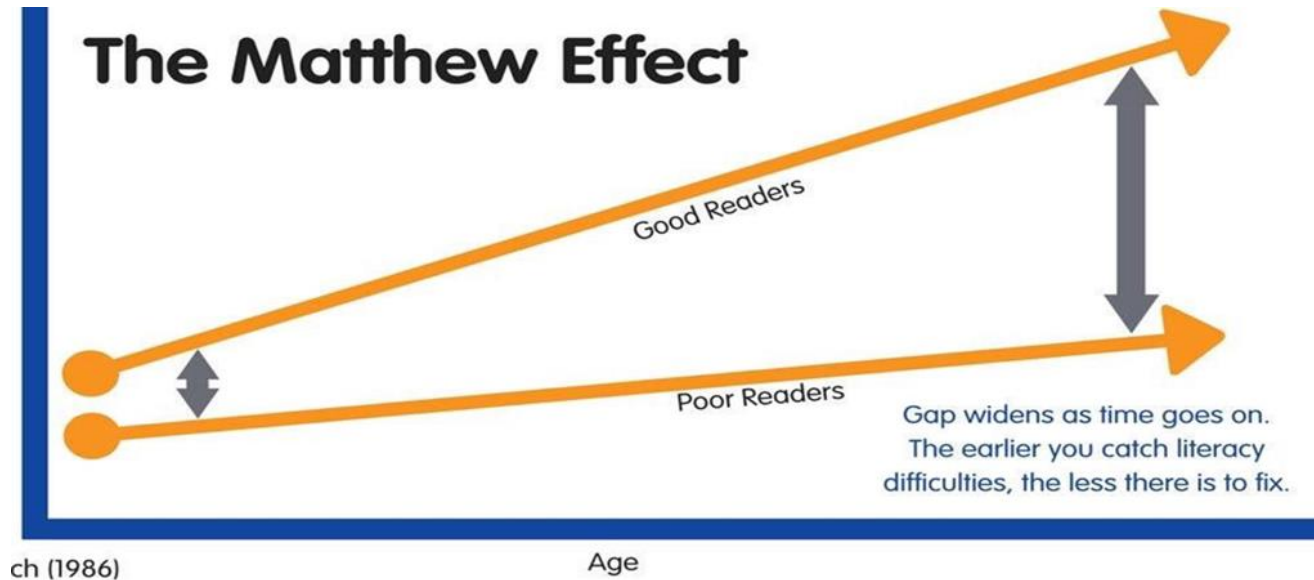
And the situation gets worse as the years go by.



Knowledge also
helps you *retain*
new
information.

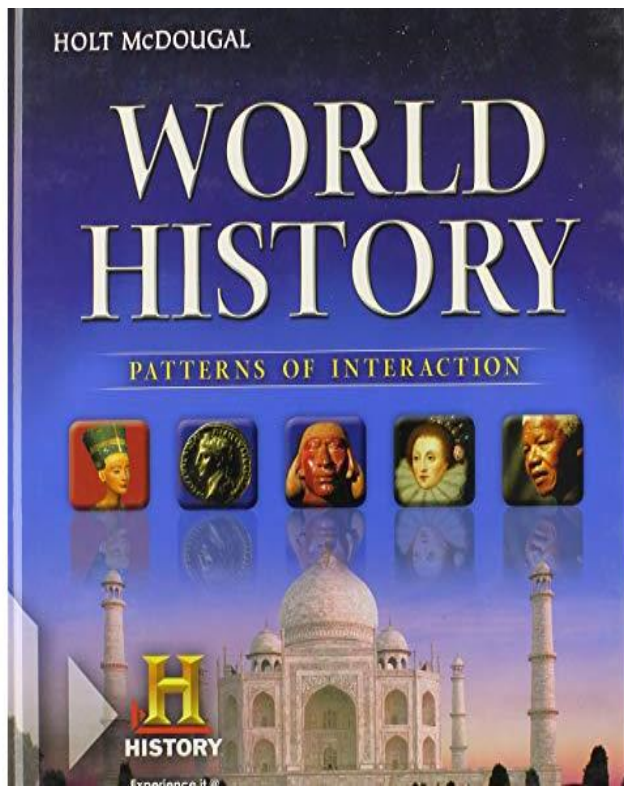


A knowledge gap between “good” and “poor” readers grows over time:



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.



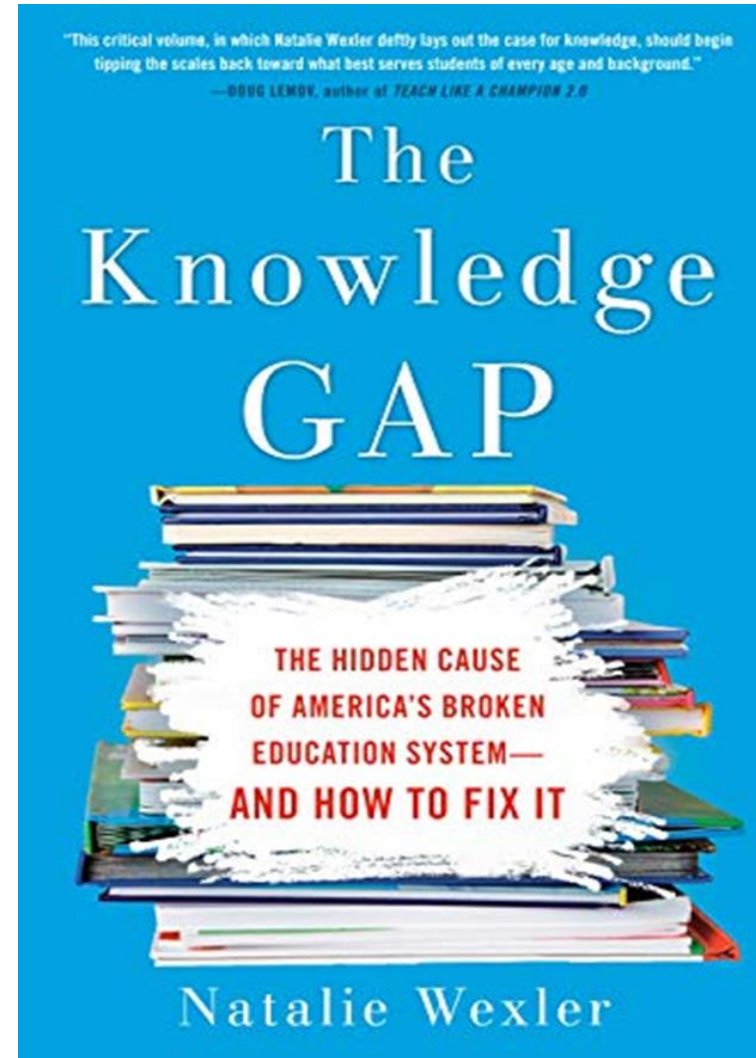
Part of released item from the SAT:

Jan Gimsa, Robert Sleight, and Ulrike Gimsa have hypothesized that the sail-like structure running down the back of the dinosaur *Spinosaurus aegyptiacus* improved the animal's success in underwater pursuits of prey species capable of making quick, evasive movements. To evaluate their hypothesis, a second team of researchers constructed two battery-powered mechanical models of *S. aegyptiacus*, one with a sail and one without, and subjected the models to a series of identical tests in a water-filled tank.

A related knowledge gap:

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

With remote
and hybrid
learning ...
the situation
has become
more urgent
than ever.

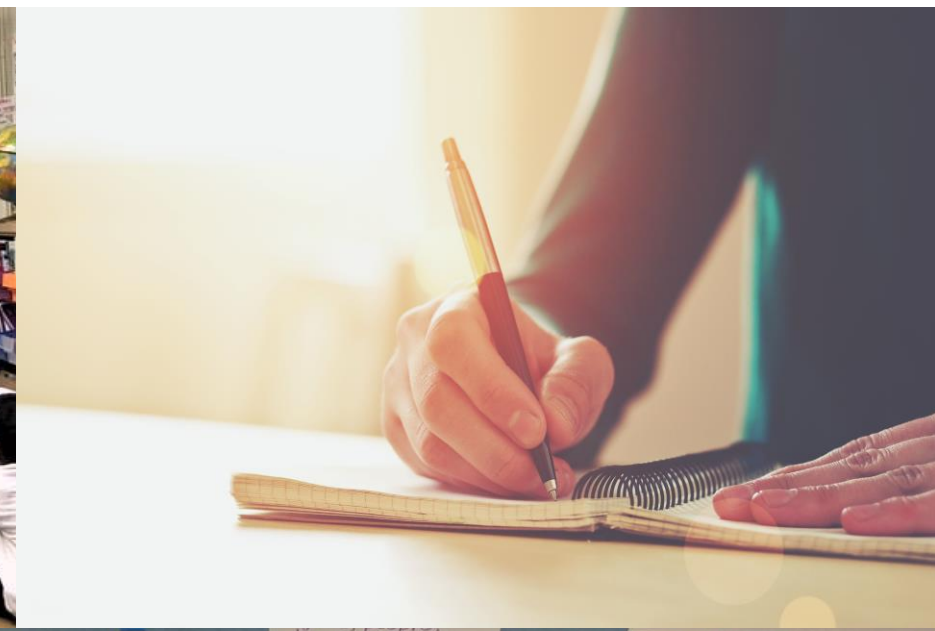




Where can we
go from here?

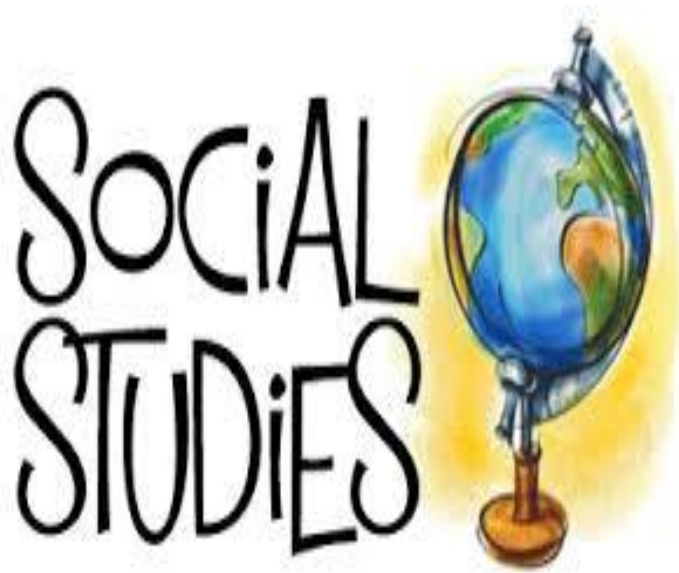
What teachers can do:

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?

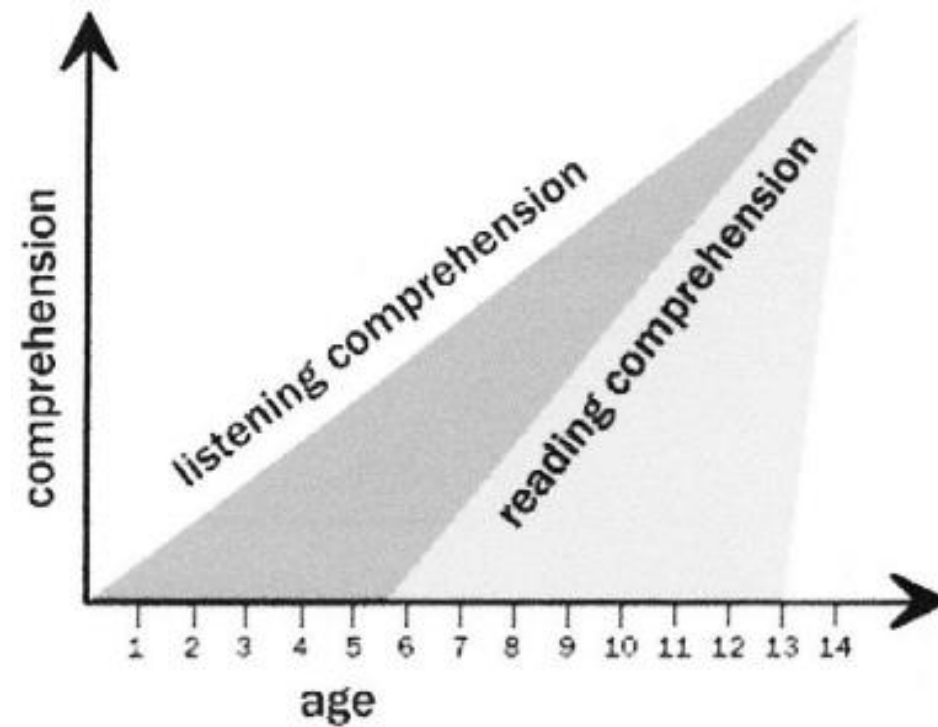
Ideally, adopt a content-focused elementary literacy curriculum that goes deeply into topics in ...



Boost student learning by connecting all aspects of literacy.



Listening comprehension exceeds reading comprehension through age 13, on average.

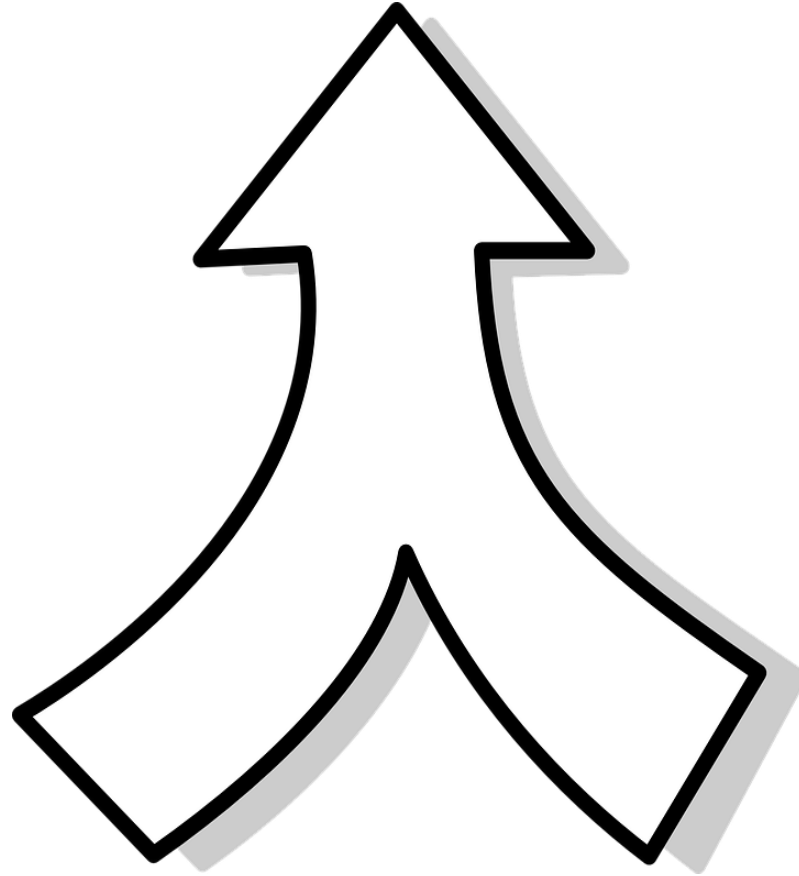
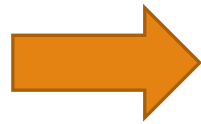


Fisher & Frey, 2014, citing Sticht & James, 1984

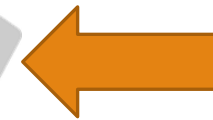
Eventually students will draw on the knowledge they've acquired through listening/discussion to read and write at a higher level.



Foundational skills:
systematic
instruction and
practice.



Knowledge,
vocabulary, complex
syntax:
read-alouds and
discussion.



Literacy develops along two separate paths that ultimately converge.

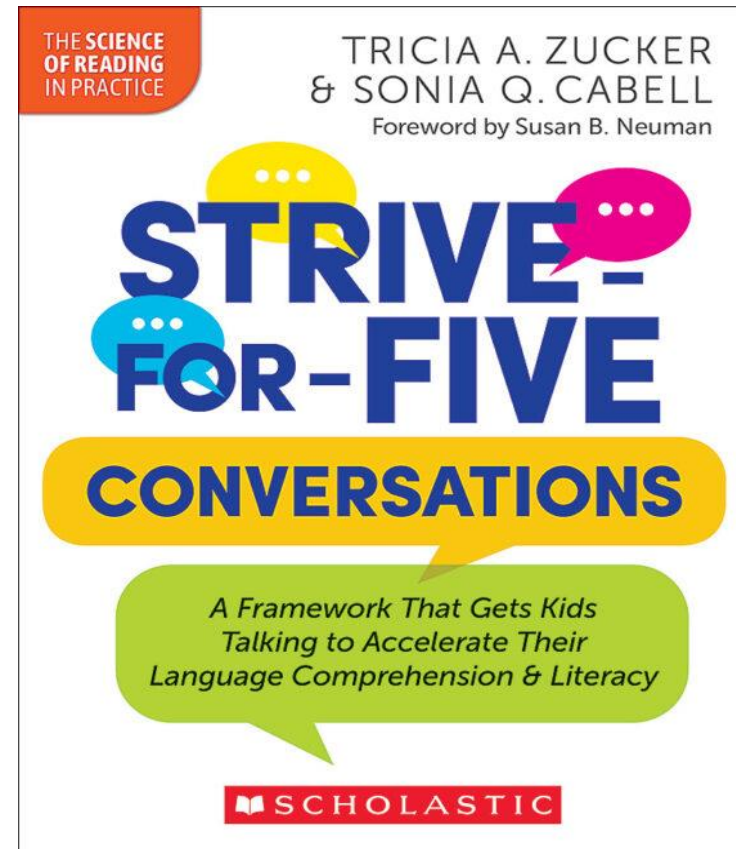
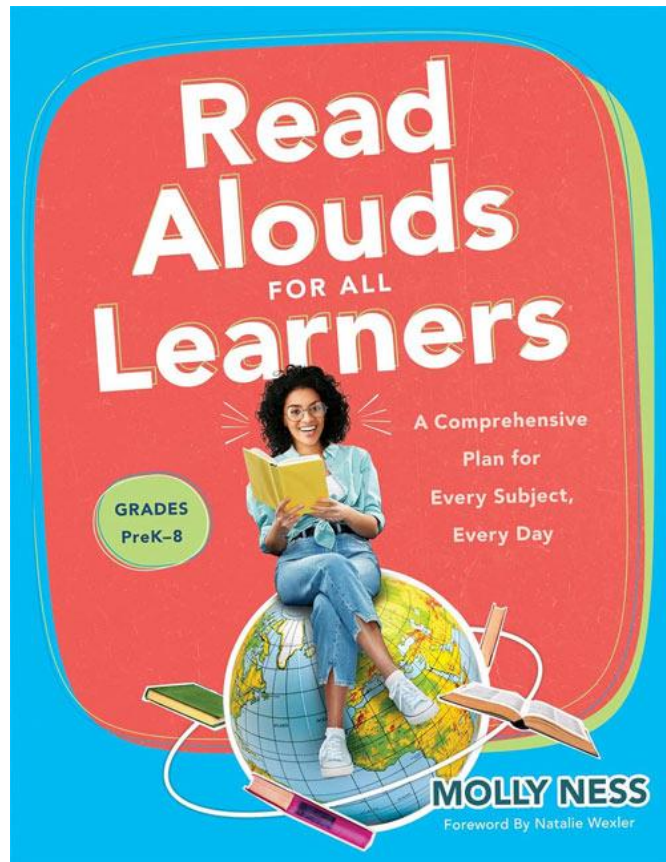
The Power of “Just Reading” a Good Novel

- 365 students in the equivalent of 7th grade
- Two challenging novels in 12 weeks, mostly read aloud by teachers
- On average, students made ~9 months of progress in reading comprehension
- Poor readers made 16 months of progress

Westbrook, Sutherland, Oakhill & Sullivan, 2019



Resources for Read-Alouds and Dialogue



A knowledge-building approach can get kids excited about reading.

The Atlantic, 8.10.20

How to Show Kids the Joy of Reading

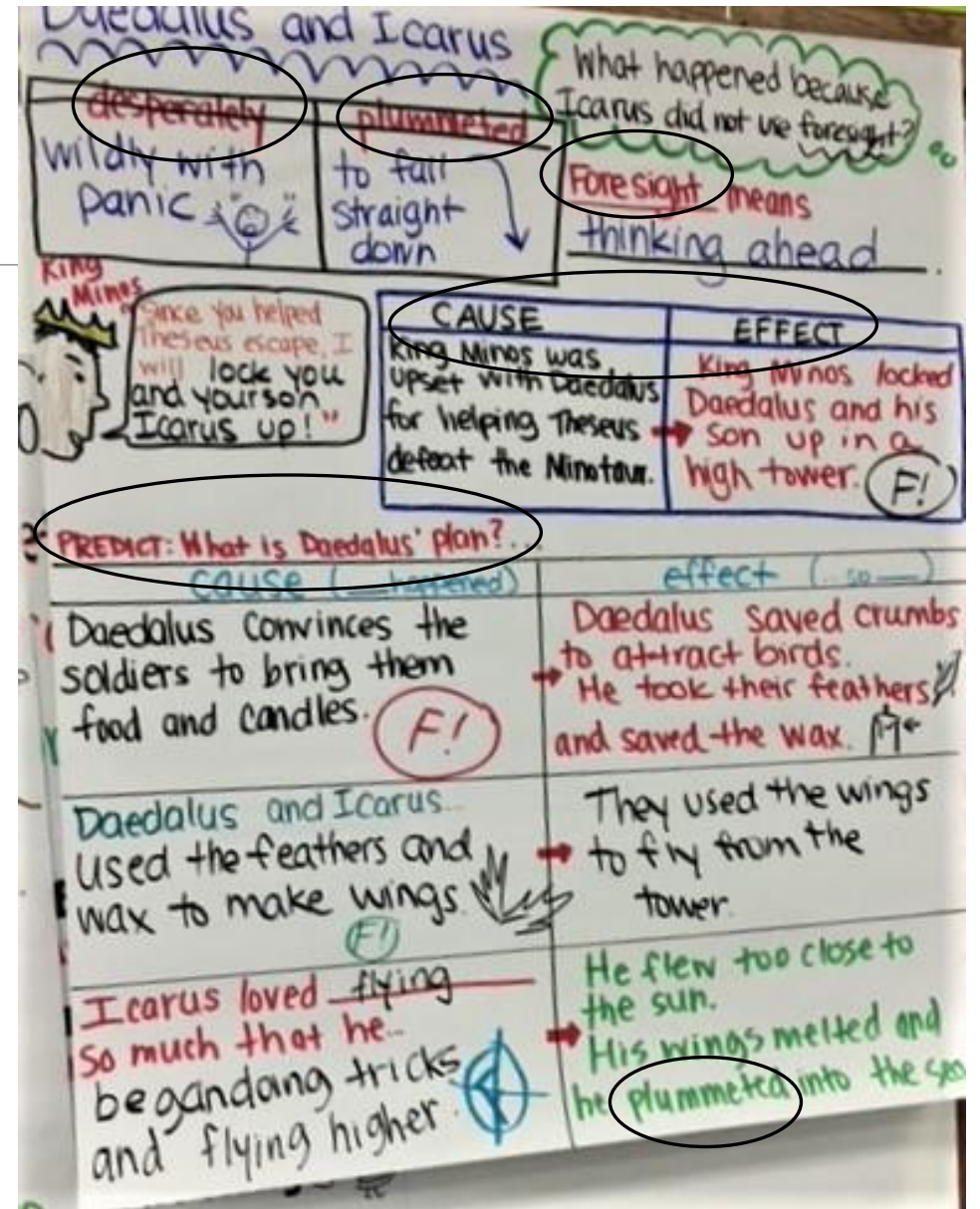
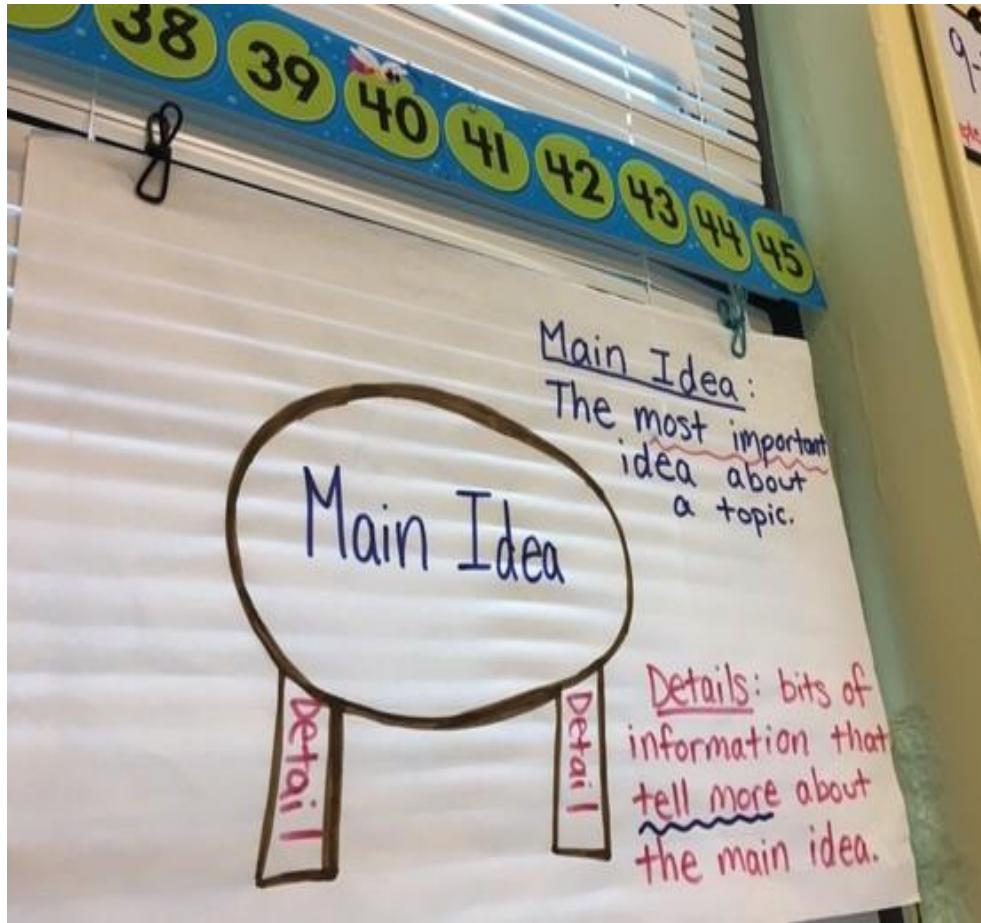
Deloris Fowler had seen educational reforms come and go. Then one of them surprised her.

By Natalie Wexler



- 3rd Grade: The Vikings, Ancient Rome
- “And the librarian had to order more books. She actually came to me and said what are the topics you're teaching in CKLA, because I want to order more books, because **the kids are asking for these books on these topics.**”

A tale of two classrooms



A knowledge-building curriculum enables students to *use* strategies

Teacher: What was something *unique* about civilizations in Ancient Greece?

Second-grader: Something unique was that they weren't near a river and they didn't have any fertile soil, so it was difficult for them to farm.



For information on knowledge-building curricula, check out the Knowledge Matters Campaign.

Learn what characterizes each curriculum – and gives all of these materials an advantage over programs that are organized around strategies and skills.

AMPLIFY ELA (6-8)

ARC CORE (K-5)

BOOKWORMS (K-5)

CORE KNOWLEDGE LANGUAGE ARTS (6-8)

CORE KNOWLEDGE/AMPLIFY (K-5)

EL EDUCATION (K-8)

FISHTANK ELA (K-8)

LOUISIANA GUIDEBOOKS (3-8)

READING RECONSIDERED (5-8)

WIT & WISDOM (K-8)

About the Knowledge Matters Review Tool

We've developed the Knowledge Matters Review Tool to help educators understand how key research insights and practices should be translated into curriculum design for K-8 ELA. It is intended for use by states, districts, and schools when evaluating ELA curriculum.

The Review Tool is designed to be used in addition to, not instead of, other instruments to ensure that "knowledge building," and by extension reading comprehension, is appropriately addressed.

Our team of experts has identified 26 separate criteria across eight dimensions of high-quality, content-rich ELA curriculum. The more evidence these criteria are present in a curriculum, the better.

<https://knowledgematterscampaign.org/>

How can you tell if a curriculum builds knowledge effectively?

Red flags to watch out for:

- Overstuffed/not curated
- Thin content or “themes” rather than topics
- New information without enough background knowledge
- Skills and strategies in the foreground
- Too much reliance on leveled texts
- Writing not linked to curriculum content
- Excerpts rather than whole texts



We still need to teach science and social studies.



Every literacy teacher should also be a content teacher.
Every content teacher should also be a literacy teacher.

Let's revisit those reading infographics ...

The Simple View of Reading



Possible misinterpretation?

Reading comprehension requires more than understanding SPOKEN language.

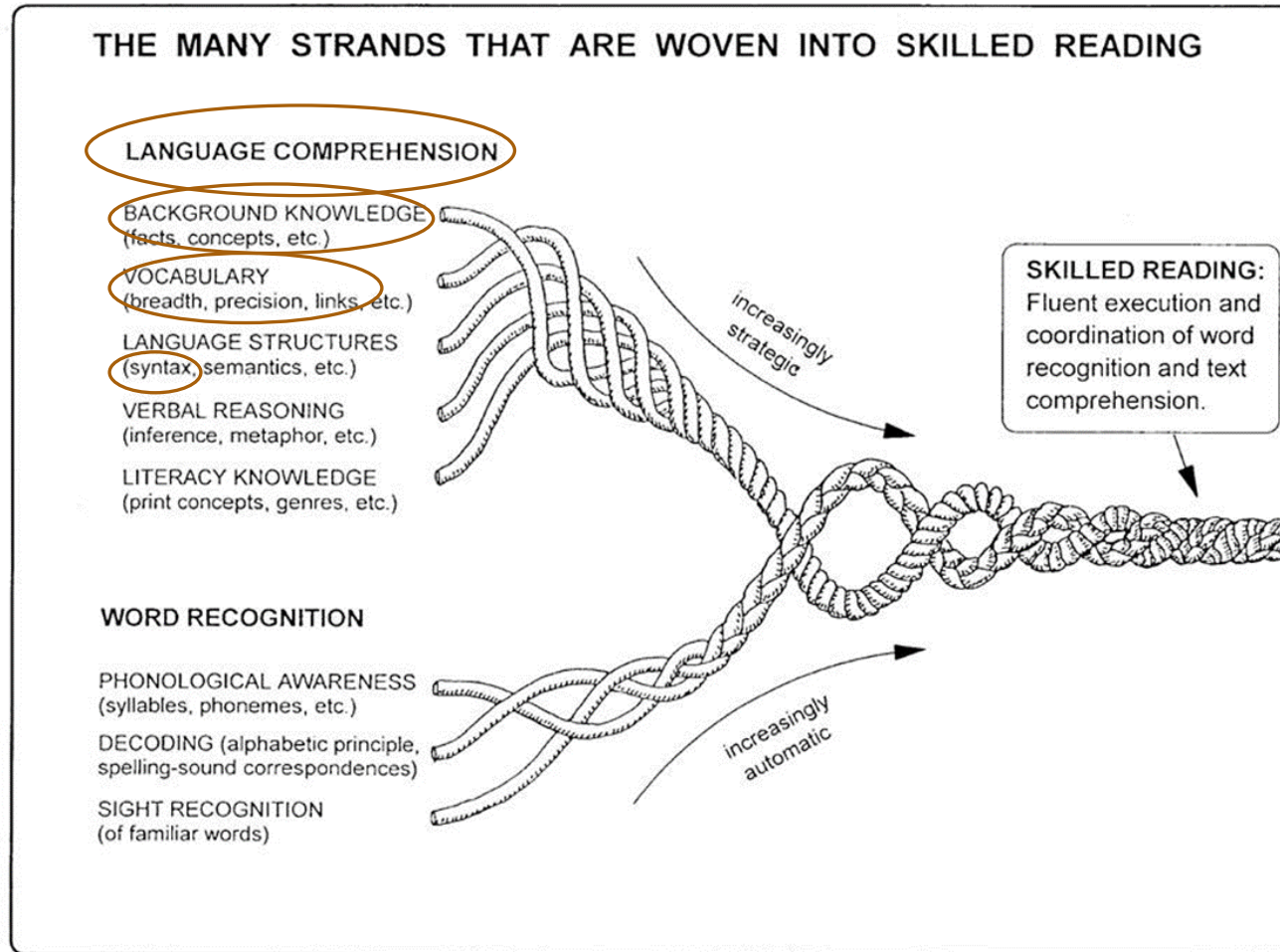
Why?

Written language is more *complex* than spoken language.



Possible misinterpretations?

- Gives the impression that comprehension should be taught as a skill, like phonics
- Omits the roles of background knowledge and familiarity with complex syntax



Possible misinterpretations?

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

Strategy instruction helps—but not the way we’re doing it.

Studies show:

- Teaching multiple strategies together works better than “skill of the week.”
- Background knowledge should be “included.”
- Students get all the benefits of strategy instruction after just a few hours.
 - No difference between four hours and several hundred. (Willingham, Beyond Comprehension, ASCD Educational Leadership vol. 81, no. 4)



Teachers *don't* have to choose between building knowledge and teaching comprehension strategies.

- Put content in the foreground and bring in whatever skills/strategies are appropriate.
- Any effective knowledge-building curriculum will incorporate strategy instruction—even if it's not labeled as such.
- Use **writing instruction** to teach strategies like “finding the main idea” and summarizing.



What about higher grade levels?

- There's content, but students aren't equipped to access it.
- All is not lost!
- Teacher-led read-alouds can help.
- Also: morphology, etymology.
- Writing instruction can make a huge difference.



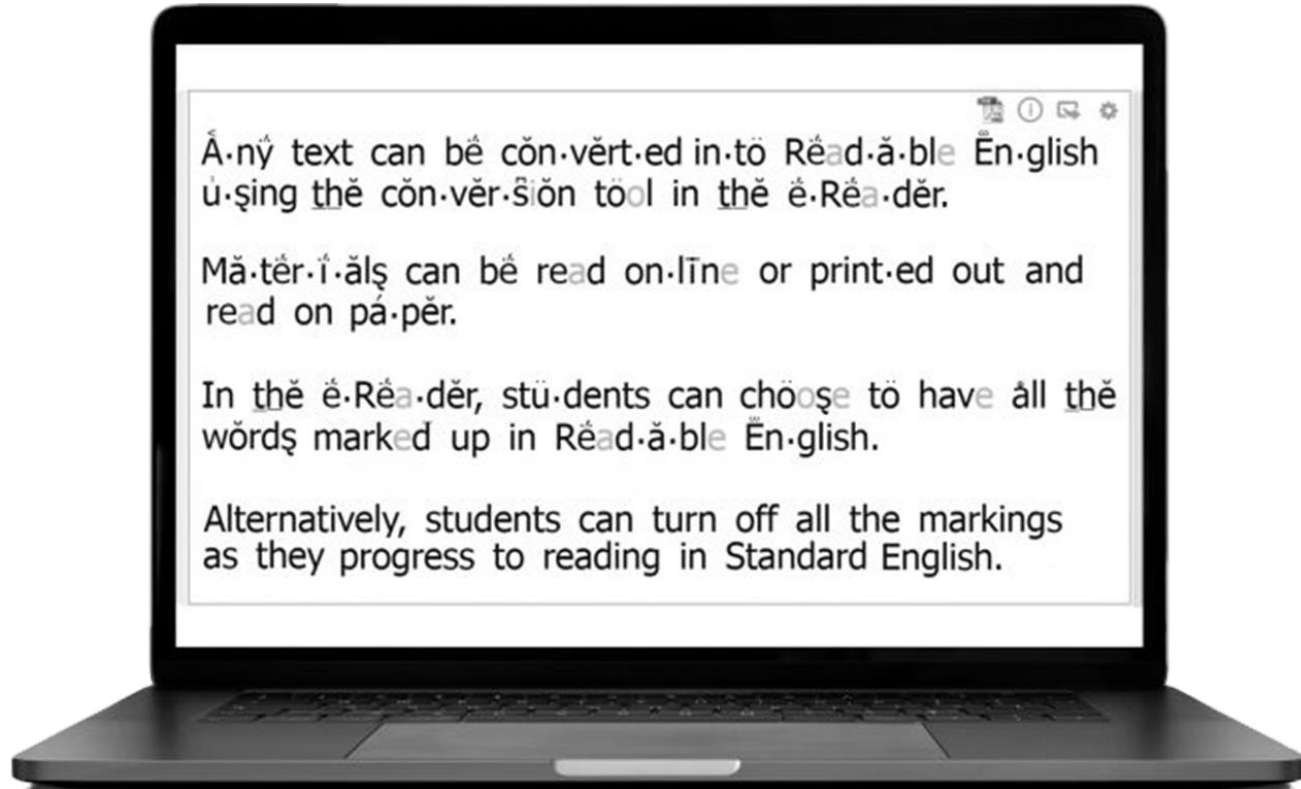
Ways to help struggling readers at higher grade levels with foundational skills

No Statute of Limitations on Learning to Read Well:
What do Upper-Level Students Need When They
Are Struggling to Read?

August 13, 2024 by Susan Pimentel, David Liben and Meredith Liben

<https://www.shankerinstitute.org/blog/no-statute-limitations-learning-read-well>

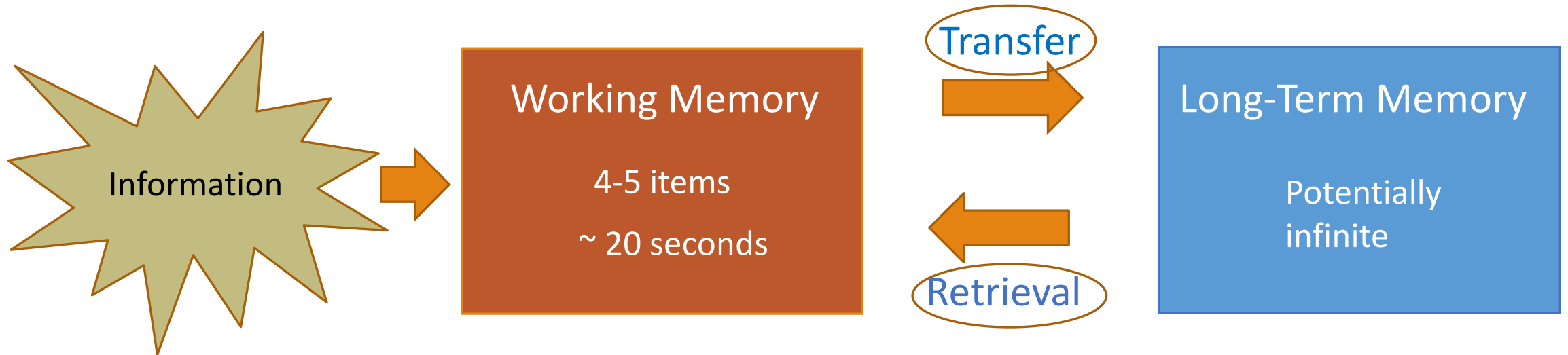




If students are struggling to decode multisyllabic words ...

Readable English

Writing can be a powerful lever for building knowledge:



Writing helps with both “transfer” and “retrieval.”

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

Working Memory

4-5 items

~ 20 seconds

“Cognitive load” = the burden placed on working memory

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

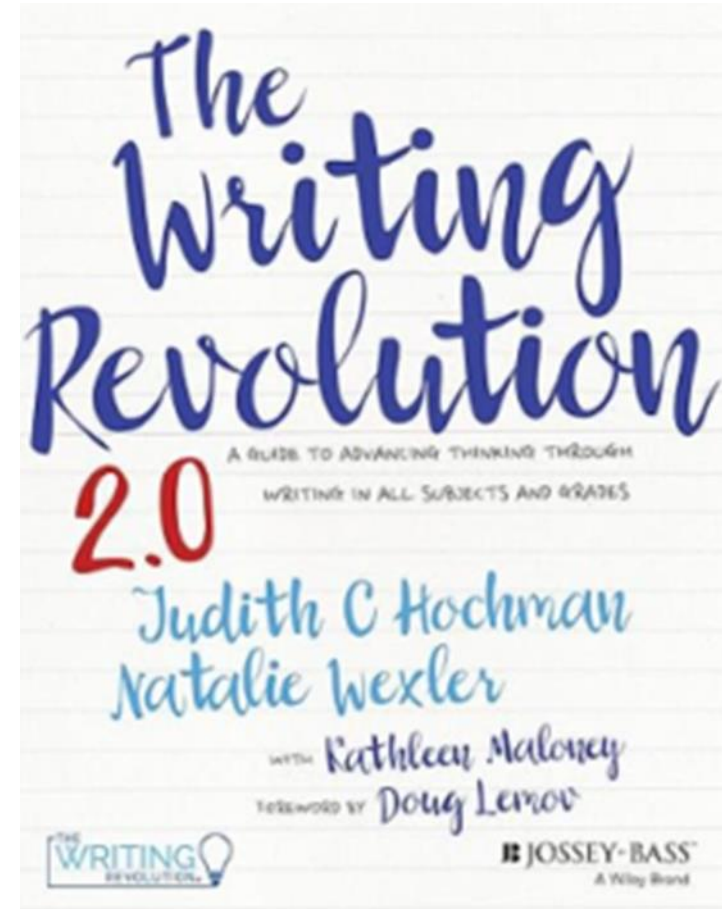
Writing instruction has enormous potential power.

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



Effective writing instruction can turbocharge any content-rich curriculum.

COMPREHENSION

strategies vs. skills

- Using Schema
- Predicting
- Inferring
- Questioning
- Determining Importance
- Visualizing
- Synthesizing

- Main Idea & Details
- Author's Purpose
- Determining Theme
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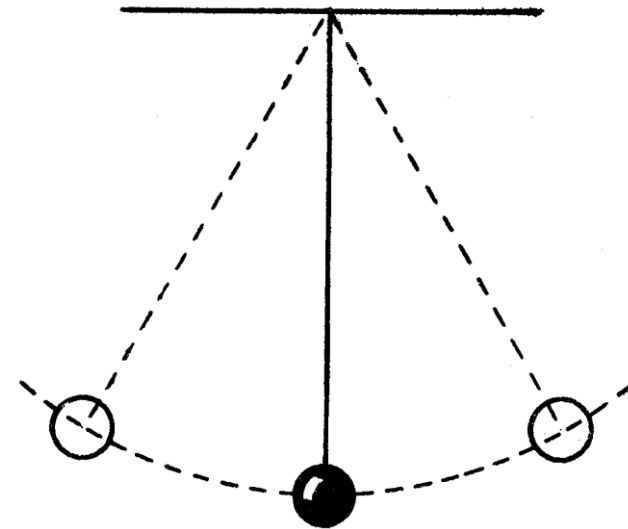
READ TO COMPREHEND

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

If we *just* focus on fixing the “phonics”
problem...

Many students will not
become fully literate ...

And the pendulum may
swing away from phonics
once again.



There may be obstacles to successful implementation of a knowledge-building approach.

SUCCESS

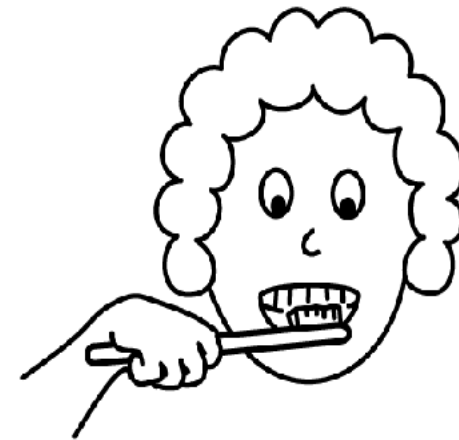


FAILURE



One
potential
obstacle:
testing

Other possible obstacles



To overcome these obstacles, teachers may need:

The Why



The What



The How



Things are beginning to change ...

BETWEEN THE LINES: CHAPTER FIVE

Why Kentucky's reading crisis can't be solved by phonics alone

As some Kentucky school districts go all in on phonics, they are quick to realize there's much more to making kids proficient readers.

Mandy McLaren Louisville Courier Journal

Published 5:02 AM EDT Oct. 19, 2022 | Updated 5:06 PM EDT Oct. 19, 2022

"I think for so long we thought that (our students) couldn't understand these things, so we didn't teach these things to them," [a third-grade teacher] said.

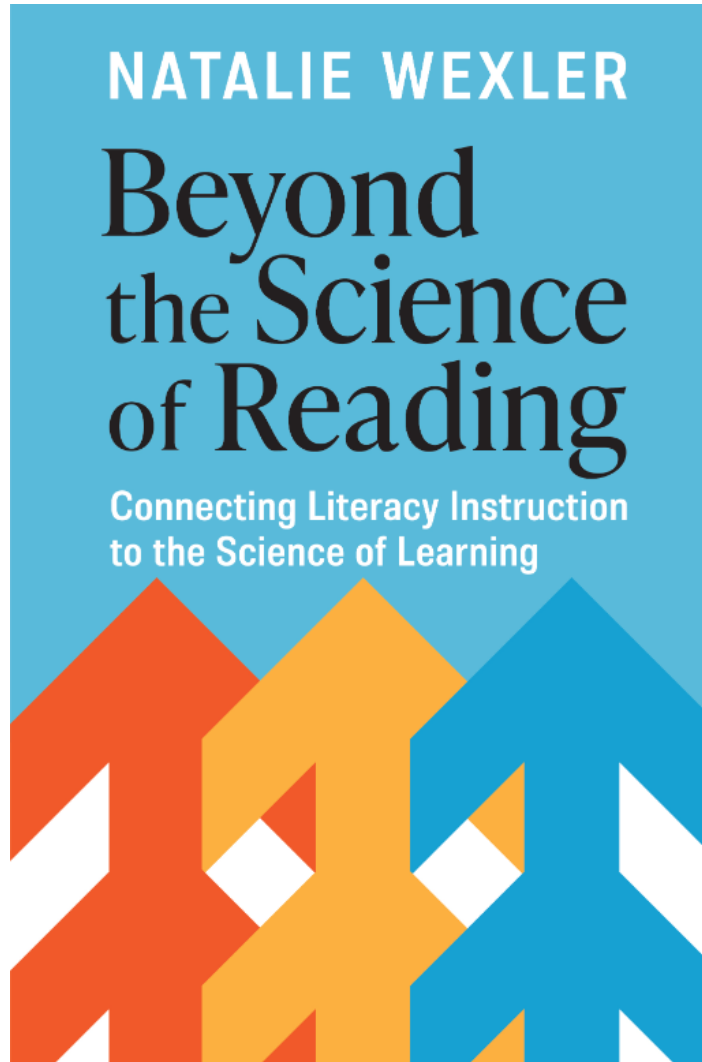
But three years into the new reading approach, [she] and her colleagues say they have proof to the contrary.

"They like being challenged," said a second-grade teacher.

"It's their favorite part of the day."



The Power of a Knowledge- Building Approach



Coming in
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Thank you!

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