



Background Knowledge: The Velcro to Which New Learning Sticks

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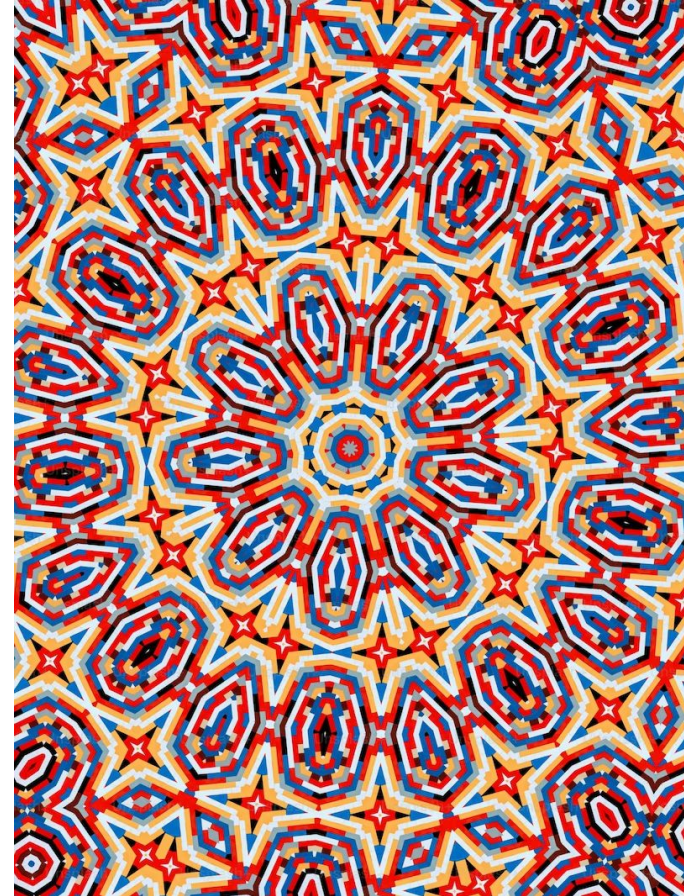
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Building Background Knowledge: Diverse Student Population

Some students have had experience with snow and winter storms; other have not. Some students have seen governments collapse; others have not. Some students have been taught multiplication facts; clothes have not. Some students have been to every museum in the community; others have not. Some students have access at home to new media texts, while others must depend on schools and libraries for internet access.

Fisher, Frey & Lapp, 2012



Objectives

- Define background knowledge.
- Review evidence that supports the connection between background knowledge & comprehension.
- Review evidence-based practices to build knowledge networks.
- Analyze the current role of background knowledge in current reading curricula and instructional practices and identify any next steps to strengthen this role.



The Research Statement Guiding Our Discussion Today

Controlling for other factors, knowledge plays the **LARGEST** role in comprehension. The more a reader knows about a topic, the more likely they are to successfully comprehend a text about it.

~Cromley & Azevedo, 2007; Ozuru, Dempsey & McNamara, 2009

Research over the past 40 years or so has made it clear that the knowledge that students bring to a text—any text—will have an impact on what is comprehended or learned from that text.

The more you know, the better your comprehension tends to be.

Shanahan, 2017

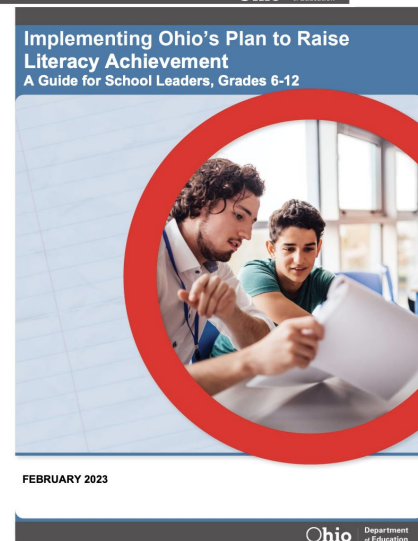
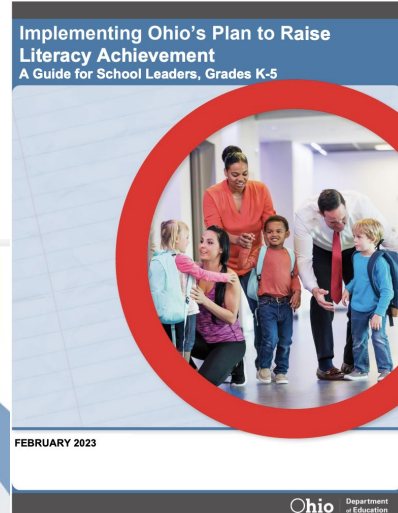


Grounding the Work in Ohio's Plan

Ohio's Plan to Raise Literacy Achievement

Implementing Ohio's
Plan to Raise Literacy
Achievement: A Guide
for School Leaders, K-5

Implementing Ohio's
Plan to Raise Literacy
Achievement: A Guide
for School Leaders, 6-12



Implementing Ohio's Plan to Raise Literacy Achievement

A Guide for School Leaders, Grades 6-12



FEBRUARY 2023

Reading Comprehension

Why Is Reading Comprehension Important?

Reading is the vehicle for learning content in all subject areas. As adolescents encounter increasingly complex texts, access to content becomes critically important. The ability to extract meaning from text is essential.

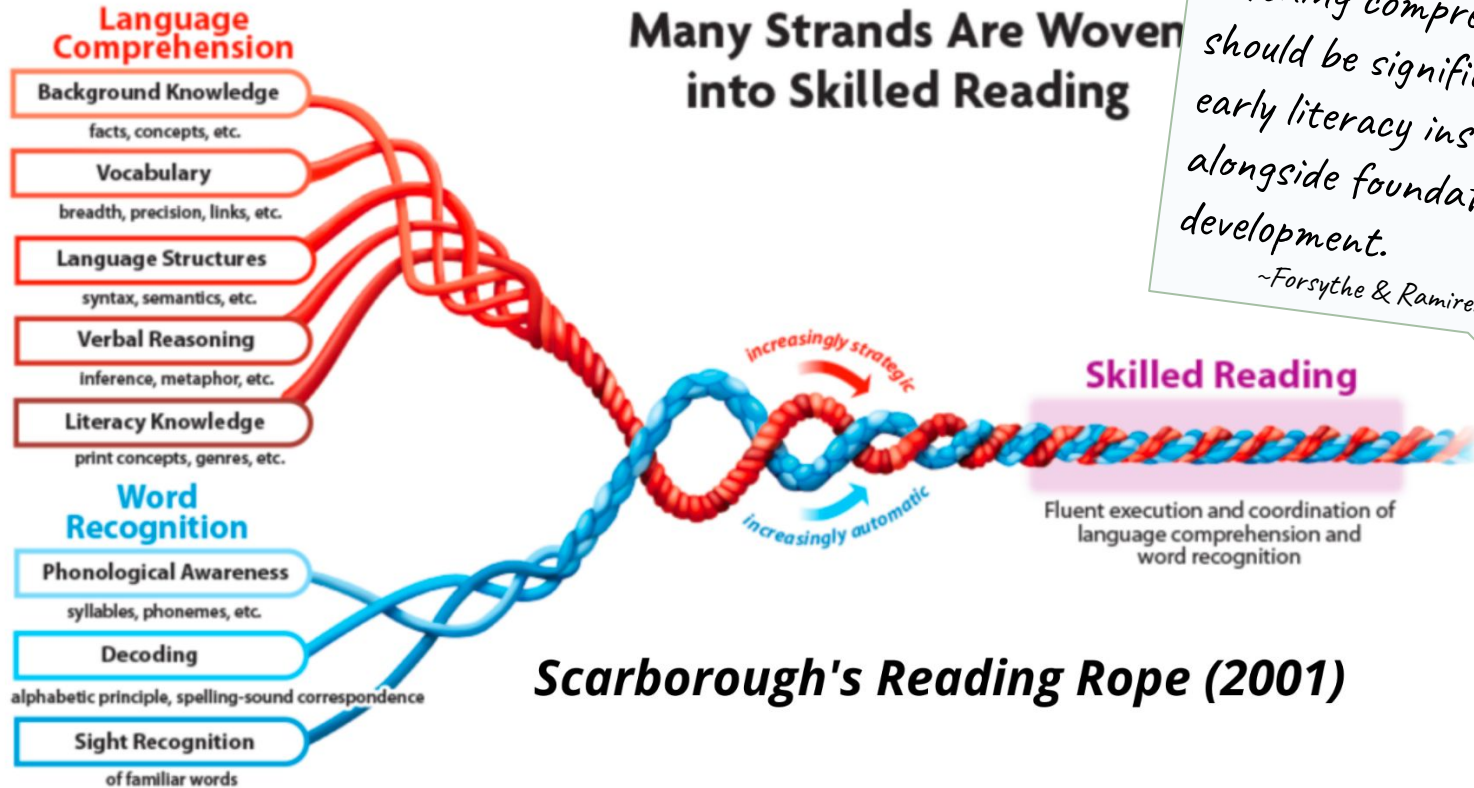
Implementing Ohio's Plan to Raise Literacy Achievement: A Guide for School Leaders, 6-12, page 21

Our Anchor

Many Strands Are Woven
into Skilled Reading

Oral language development & listening comprehension should be significant parts of early literacy instruction, alongside foundational skills development.

~Forsythe & Ramirez Stukeey, 2023



Scarborough's Reading Rope (2001)

Reading Comprehension Is about Both Sides of the Rope

Reading comprehension is not a single entity that can be explained by a unified cognitive model.

Instead, it is the orchestrated product of a set of linguistic and cognitive processes operating on text and interacting with background knowledge, features of the text, and the purpose and goals of the reading situation.

Castles et al, 2018



What is our purpose for reading?

What do we want our students to know, understand, and be able to do?

Comprehension is not just about the acquisition of literacy skills; it is also about gaining knowledge.

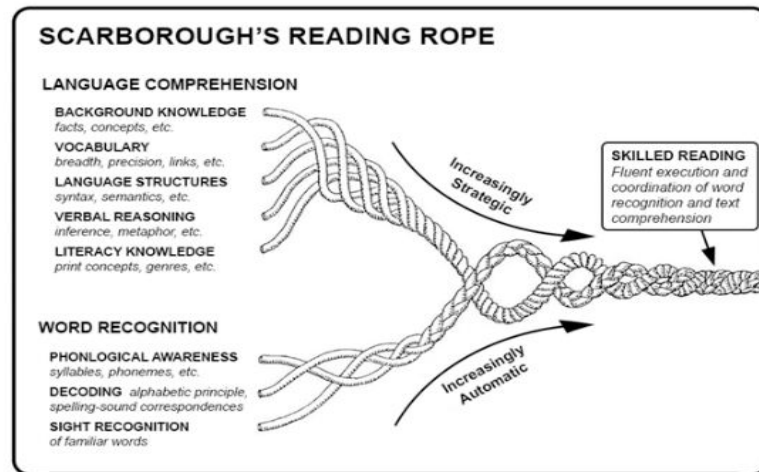
...double outcomes—an improvement in reading ability and an increased knowledge about whatever was read.

Shanahan, 2017

Table Talk:

Addressing BOTH Sides of the Simple View of Reading

1. How are your current curricula supporting language comprehension skills?
2. How are your current instructional practices supporting language comprehension skills?



Do You Agree or Disagree?

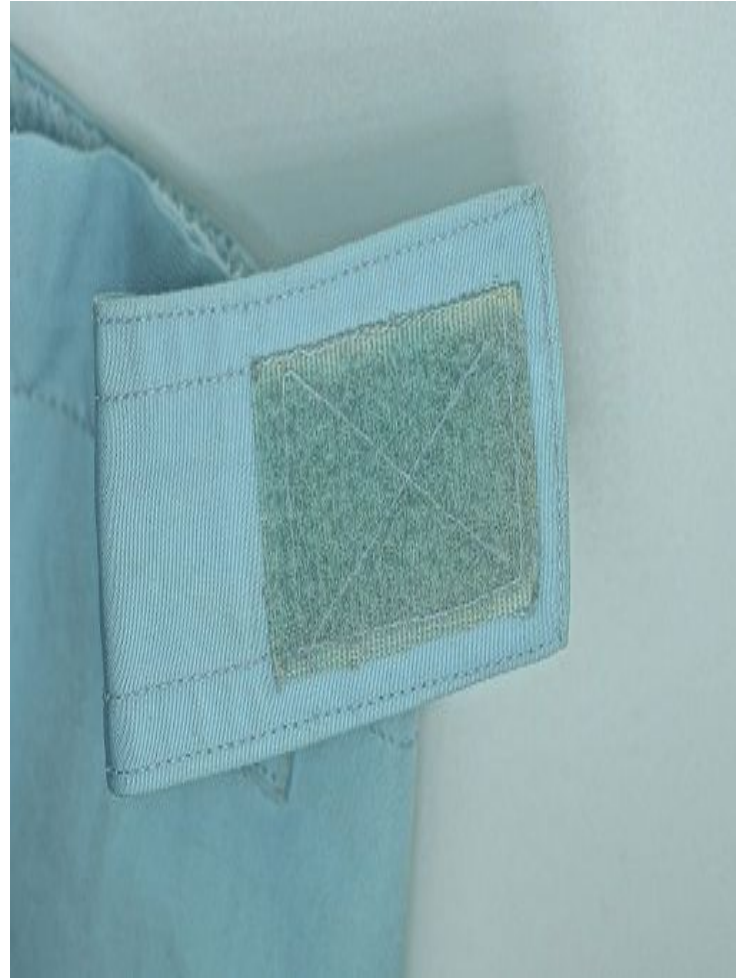
The most important factor in reading comprehension is not generally applicable skills like finding the main idea — it's how much knowledge and vocabulary the reader has relating to the topic.

So if we really want to boost reading comprehension, we should be doing the opposite of what we're doing — especially in schools where test scores are low — which is cutting subjects like social studies and science that could actually increase students' knowledge of the world and instead spending more time on these reading comprehension skills.

**What is the role of
background knowledge in
reading comprehension?**

...knowledge about the topic at hand is like mental velcro. The relevant knowledge gives the words of the text places to stick and make sense, thereby supporting comprehension and propelling the reading process forward.

Adams, 2015



Building students' general knowledge can lead to dramatic long-term improvements in reading comprehension.

A rigorous study involving more than 2,000 students has found that children who got a content-rich, knowledge-building curriculum for at least four years, beginning in kindergarten, significantly outperformed their peers on standardized reading comprehension tests.

Students from low-income families made such dramatic gains that their performance on state tests equaled that of children from higher-income families.

How Knowledge Helps: It Speeds and Strengthens Reading Comprehension, Learning—and Thinking

Dr. Daniel T. Willingham

AFT Article, 2006
17 Years Ago

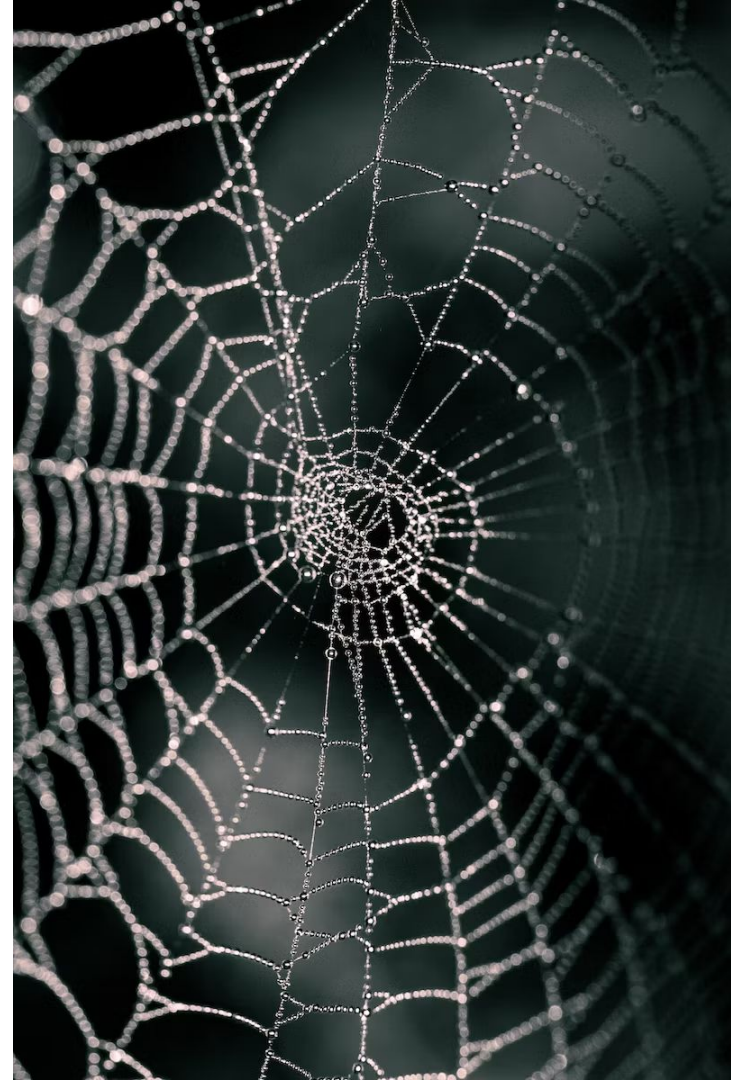
Those with a rich base of factual knowledge find it easier to learn more—the rich get richer. In addition, factual knowledge enhances cognitive processes like problem solving and reasoning.

The richer the knowledge base, the more smoothly and effectively these cognitive processes—the very ones that teachers target—operate. So, the more knowledge students accumulate, the smarter they become (30).

The knowledge a student brings when they read a text for the first time supports their ability to add to their body of knowledge and retain that new learning.

For instruction to be truly liberatory and for learning to be sticky, it has to help students expand what they know, make deep connections across disciplines, and integrate new content into their existing funds of knowledge.

Hammond, 2012





What you're helping children to do is to create a mosaic, putting all those ideas together in a knowledge network.

If you don't do it **explicitly**, many children cannot do it on their own.

Neuman, 2021

MYTH

In kindergarten through second grade, students ‘learn to read’ and from third grade on, students ‘read to learn.’

FACT

Reading to learn—reading to build knowledge—can start immediately upon students’ exposure to text, assuming we give students the opportunity.

...that whether or not readers understand a text depends far more on how much **background knowledge** and **vocabulary** they have relating to the topic than on how much they've practiced comprehension skills.

Willingham, 2018



How much a reader already knows about the subject is probably the best predictor of reading comprehension.

When readers engage with a text for which they have limited background knowledge, the text is much more difficult to understand than one for which they have ample background knowledge. ...research indicates that children continue to spin their wheels when they don't have the background knowledge required to understand much of what they are reading.

Fisher & Frey

Table Talk:

The Role of Knowledge in Reading Comprehension

What do these statements tell us about the role of knowledge in reading comprehension? How do our current literacy practices support these statements? What work might still need to be done?

- Comprehension is knowledge in disguise. ~Susan Neuman
- Knowledge is like velcro. Kids who start out with more knowledge and vocabulary are in a better position to absorb and retain more as they grow.” ~Natalie Wexler
- Knowledge is the key to comprehension. If you want to know how much a student reads after they read a passage, you need to know how much they understood before they read the passage. ~Hugh Catts
- We should be striving for double outcomes - an improvement in reading ability AND an increased knowledge about what was read. ~ Tim Shanahan

The Matthew Effect

The Rich Get Richer - Knowledge leads to *more* knowledge.

Researchers confirm that prior knowledge and the ability to organize new information are essential to learning. A crucial element in learning is integrating and connecting ideas into our existing mental frameworks. In a school setting, this has serious effects on equity.

Willingham, 2006





Activity

Worried? Us?

<https://granta.com/worried-us/>
(Section 3 of the article)

Underline any background knowledge and vocabulary needed to comprehend the passage (historical figures, sayings, general facts, geography, etc.).



Remedial Class

- 1 student could identify Gandhi
- 0 had heard of Ernest Hemingway or Henry David Thoreau
- 2 knew Job was a character in the Bible
- 1 had a vague recollection of George Orwell

Schweizer, B.(2009). Cultural Literacy: Is it Time to Revisit the Debate?
Thought and Action. 51 -56.



Advanced Class

- 4 / 15 knew Gandhi and Hemingway
- 0 knew the word “quixotic”
- Few comprehended the expression “something is in the offing” or the allusion “the snows of Kilimanjaro are set to become the rocks of Kilimanjaro.”

Schweizer, B.(2009). Cultural Literacy: Is it Time to Revisit the Debate?
Thought and Action. 51 -56.



Dr. Schweizer's conclusion is alarming.

His students were “not only hampered by a lack of factual knowledge ...this shortcoming translated into problems with literacy as well.”

Schweizer, B.(2009). Cultural Literacy: Is it Time to Revisit the Debate? Thought and Action. 51 -56.

Cultural Literacy: Is it Time to Revisit the Debate?

by Bernard Schweizer

I went to graduate school during the height of the culture wars, when the debate over the place of cultural literacy in the curriculum and the legitimacy of the great books approach was still raging. The first college class that I taught, a section of freshman composition at Duke University, was structured around the theme “education and the making of knowledge,” with E.D. Hirsch and Paulo Freire figuratively butting heads in our reading assignments and classroom discussions. My mentors at the Duke Writing Program encouraged me to view proponents of cultural literacy like Hirsch and Teachout with massive suspicion as the purveyors of a narrow set of privileged, specifically western, masculine, White values masquerading as universal truths. I duly inculcated this vision into my freshmen, encouraging them to abhor the “banking concept of education” and instead to embrace the flexible, diverse, democratic, ad-hoc concept of learning propagated by Freire.

“Even the best phonics-based skills program will not transform a child into a strong reader if the child has limited knowledge of the language, impoverished vocabulary, and little knowledge of key subjects.”

Davis, 2005, p. 15



Comprehension

Comprehension entails the understanding of written text, a process in which information from the text and the knowledge possessed by the reader act together to produce meaning.

Anderson, Hiebert, Scott & Wilkinson, 1985



...the text is not so much a vessel containing meaning as a source of partial information that enables the reader to use already-possessed knowledge to determine an intended meaning.

Neuman, 2019



Table Talk

What are your students reading?



- ❑ Do your readings support the development of knowledge?
- ❑ Do your readings provide opportunities to develop necessary language processes and skills?
- ❑ Do your texts provide opportunities to develop and apply academic language skills to text ?
- ❑ Do your readings represent different genre, disciplines, the interests and experiences of your readers, are culturally responsive?
- ❑ Have you considered access issues for struggling readers?

Hennessy, 2020

Research clearly shows that how much readers understand about a text's topic before they read is a major factor in how much they understand while and after they read it.

Hugh Catts, Rethinking How to Promote Reading Comprehension



The Baseball Study

Recht & Leslie, 1988



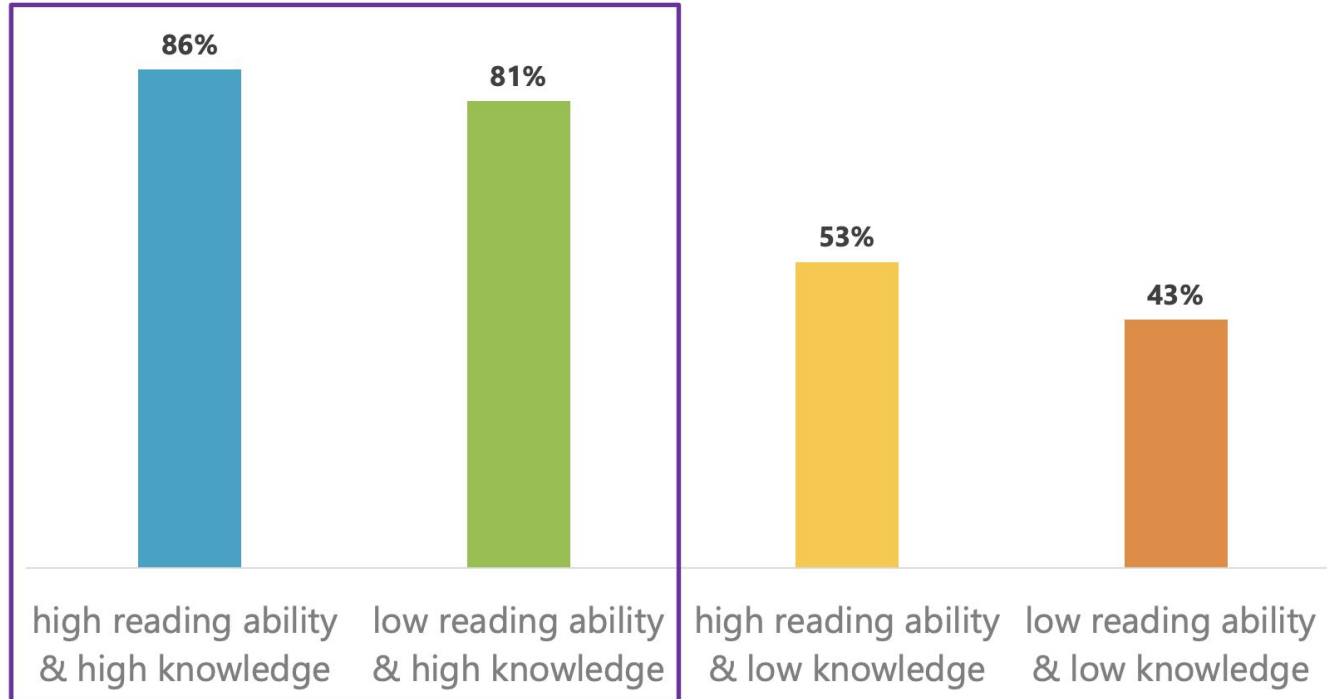
How big of a role does knowledge and the associated vocabulary play in comprehension?

Recht & Leslie (1988) Compared Reading Comprehension for Four Categories of Students

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

Knowledge of the topic had a much bigger impact on comprehension than generalized reading ability did.

Measure of Comprehension





Findings of the Baseball Study

- Knowledge of the topic had a MUCH bigger impact on comprehension than generalized reading ability did (p. 18).
- With sufficient prior knowledge, “low ability” students performed similarly to higher ability students (p. 19). The difference in their performance was not statistically significant.

How Are You Applying This to Your Practices?

Research shows that regardless of their reading ability, students who have a **strong knowledge of the topic** being read but struggle with accuracy, comprehend equally to those that read that level of text easily.

Implications

- A student doesn't have ONE reading level.
- Each student has MANY LEVELS depending on the topic & their background knowledge.
- Students can read more difficult texts if they have sufficient prior knowledge.



A close-up photograph of several layers of yellow caution tape. The tape is stretched across the frame, with the words "DO NOT CROSS" printed in bold, black, capital letters. The background is blurred, showing what appears to be an indoor setting with structural elements.

Building Background Knowledge vs. Activating Prior Knowledge

- Activation presumes students already have background knowledge that needs to be brought forward.
- Building a body of knowledge supports students in learning and deepening knowledge in topics they may or may have not been exposed to in the past.
- Building knowledge systematically adds to students' knowledge base and supports their comprehension (Ramirez Stucky, Fugnitto, Fraser & Sawyer, 2023).
- Don't rely on activating students' knowledge as their prior knowledge may be incorrect. If a student's background knowledge is of errors and misconceptions, it needs to be corrected (Schwartz, Tsang, & Blair, 2016).
- **Don't activate; build & teach background knowledge.**

Improving reading comprehension is a complex process that requires multiple levels of instruction and practice.

Clearly, building background knowledge that is both deep and broad is needed to lay the foundation for comprehension and for further knowledge acquisition.

However, students also need high-quality reading instruction involving decoding, fluency, vocabulary, and comprehension strategies in order to best use their knowledge in different reading contexts and for different purposes.

Hugh Catts, Rethinking How to Promote Reading Comprehension

Pause & Reflect

Once kids are fluent decoders, a key determinant of comprehension is what kids know about the topic of the texts they are about to read.

- How are we ensuring that all of our students have that type of broad knowledge that will allow them to tackle any text that they encounter?
- What practices do we already have in place?
- What do we need to put in place to strengthen students' knowledge?



Evidence-Based Practices to Build Knowledge Networks Across the Curriculum

1. Connected text sets and big ideas
2. Wide reading
3. Read alouds
4. Word knowledge
5. Access to complex text & multiple genres
6. Higher level questions and dialogue
7. Explicit comprehension strategies

Practice 1: Connected text sets & big ideas



- Identify the big ideas and topics you want students to learn.
- Select texts that are focused on building knowledge.
- To provide enough exposure to the same concepts and words, instruction should be organized around a series of books or texts on the same general topic, supplementing the standard reading textbook with additional material if necessary.

Practice 2: Wide reading

- Reading knowledge is associated with general world knowledge (Stanovich & Cunningham, 1993).
- The more children read, the more they learn about the world (Sparks, Patton & Murdoch, 2014).
- Leverage students' curiosity and intrinsic motivation about topics they care about.
- Provide students with “mirrors, windows and sliding doors” that allow them to see themselves in literature and to learn about others' experiences and cultures as well.



“Books are sometimes **windows**, offering views of worlds that may be real or imagined, familiar or strange. These windows are also **sliding glass doors**, and readers have only to walk through in imagination to become part of whatever world has been created or recreated by the author. When lighting conditions are just right, however, a window can also be a **mirror**. Literature transforms human experience and reflects it back to us, and in that reflection we can see our own lives and experiences as part of a larger human experience. Reading, then, becomes a means of self-affirmation, and readers often seek their **mirrors** in books.”

~Rudine Sims Bishop, 2015

Practice 3: Read alouds

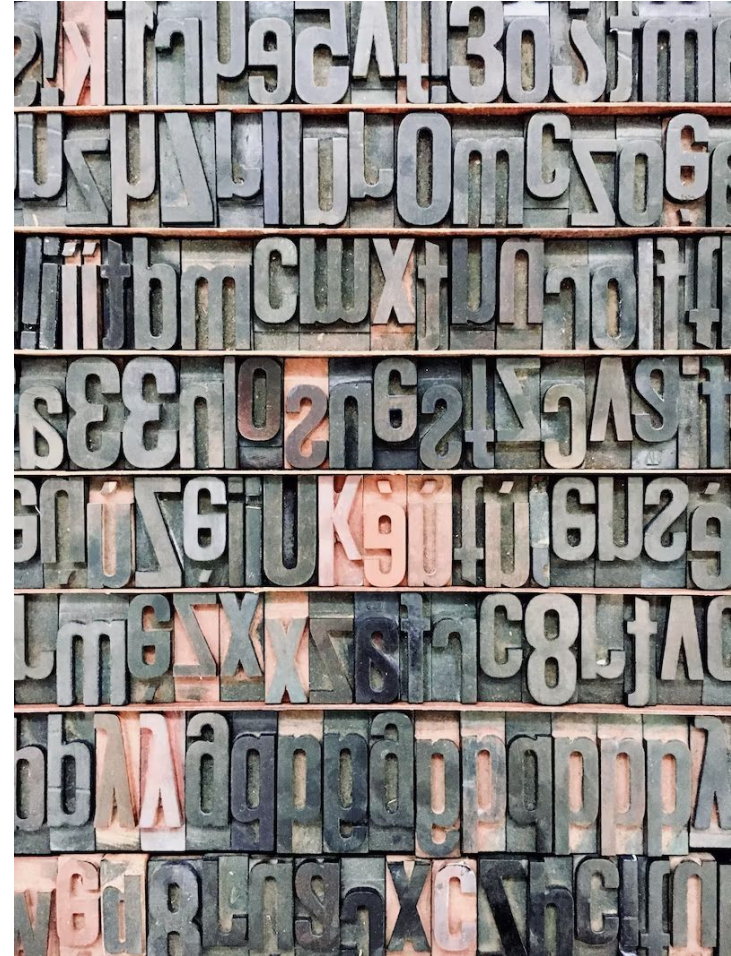
Read alouds:

- Introduce students to new topics and vocabulary (Hennessey, 2020)
- Build students' listening comprehension
- Allow every student to access grade-level and sophisticated text



Practice 4: Word knowledge

- Vocabulary is children's entry to knowledge and the world of ideas.
- Prominent predictor of reading comprehension
- Highly connected to background knowledge and language structures





World knowledge is an essential component of reading comprehension because every text takes for granted the reader's familiarity with a whole range of unspoken and unwritten facts about the cultural and natural worlds.

Hirsh, 2003

Making meaning is dependent on the ability to work with the words, their meaning at the word, and sentence level.

~Oakhill, Cain & Elbro, 2014

Children with better vocabulary knowledge have higher reading comprehension scores concurrently and longitudinally.

~Oakhill, Cain & Elbro, 2015

Table Talk

What tools do you use to build vocabulary?

- Which words will your students need to know? Which are worth knowing?
- Which ones will you intentionally target and directly teach?
- Which ones will you incidentally-on-purpose teach? How? When?
- How and when will you teach and foster the use of independent word learning strategies?
- Which words will you purposefully discuss and incorporate into expressive language activities?

Vocabulary & background knowledge have the potential to be two of the more powerful means of improving learning and comprehension of adolescent readers.
Cromley & Azevedo, 2007

Practice 5: Access to
complex text &
multiple genres



- Provide students with opportunities to add to their funds of knowledge.
- Exposure and access to engaging and conceptually rich texts, especially nonfiction, are essential for students to build knowledge of the world and support students in both a deeper and wider view of particular topics (Anderson and Guthrie, 1999).

*Children develop deeper knowledge
when they are exposed to a topic
through multiple genres.*

Neuman, 2019

- Provide frequent encounters with words and knowledge across book genres and creates a deeper and more thorough understanding of the topic.
- The use of multiple genres provides a more intensive experience for children, allowing them to deeply process lexical sets of content vocabulary and related concepts.

Neuman, 2019

*The harder a text is
for a student, the more
there is to learn.
~Shanahan, 2019*

Implication

Support students in reading complex texts with the appropriate scaffolds:

- read alouds or audio books
- opportunities for fluency practice
- explicit vocabulary instruction
- instruction on text features and genre structures
- integrated instruction in sentence and language structures and syntax



Because building knowledge is a gradual, cumulative process that extends across grade levels, the most effective way to boost reading comprehension is through a coherent content-focused curriculum adopted by a school or district.

IDA, 2021

Practice 6: Incorporate higher level questions and dialogue



- Studies shows students are given a shockingly low amount of time talking, listening, reading, and writing about text (Jeong, Gaffney & Choi, 2010).
- Discussions involving complex texts and tasks deepen students' knowledge and comprehension (Driver, Newton & Osborne, 2000).

Opportunities to talk about and more deeply process information are essential for developing knowledge. Children will need to build a strong oral language foundation in conjunction with many opportunities to learn content and connected concepts.

~Neuman, Pinkham, & Kaefer, 2015

- Rather than placing a specific comprehension skill or strategy at the forefront of instruction, teachers should start by focusing on the content of a text.
- Provide opportunities for students to talk about and process their learning.
 - Use strategies to achieve deeper, rather than surface-level, comprehension.
 - Use modeling, explicit instruction, and guided application.

Practice 7: Explicit comprehension strategies



- Strategies support students in making sense of the text as they read.
- Research shows that students improve their comprehension when they experience effective instruction around proven strategies (Hennessey, 2020).
- The use of the strategy is NOT the end goal. Strategies are simply tools in service of learning from text (Forsythe & Ramirez Stukekey, 2023).

Comprehension strategy instruction supports students in several important ways. It guides them in learning how to think about a text before, during, and after reading. It also helps students learn to monitor their understanding and notice when their meaning-making skills break down, and then figure out what to do about it.

Duke, Ward & Pearson, 2021

Some students may need minimal instruction in comprehension strategies; however, providing explicit strategy instruction is crucial to the success of many readers.

Forsythe & Ramirez Stukeley, 2023

- **Direct explanation**

The teacher explains to students why the strategy helps comprehension and when to apply the strategy.

- **Modeling**

The teacher models, or demonstrates, how to apply the strategy, usually by "thinking aloud" while reading the text that the students are using.

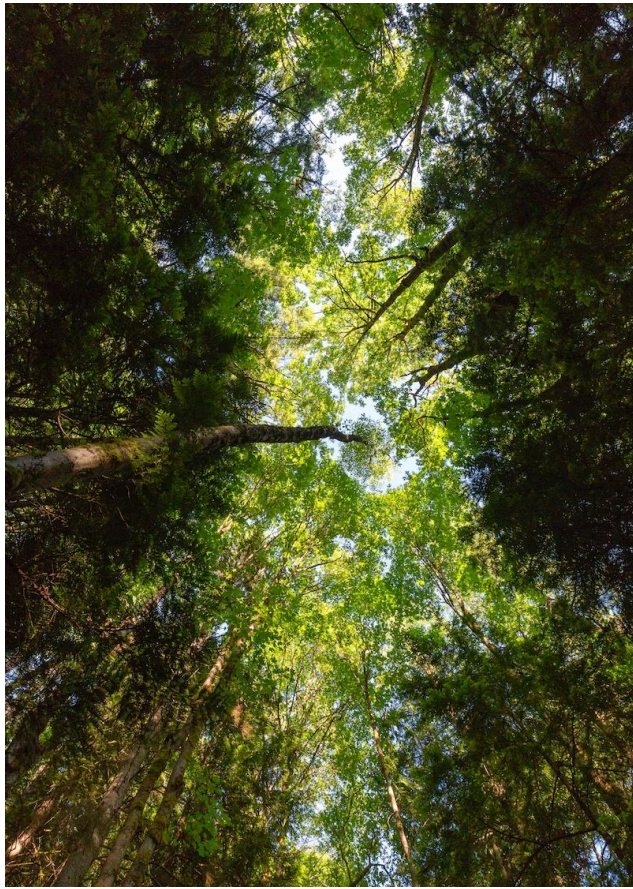
- **Guided practice**

The teacher guides and assists students as they learn how and when to apply the strategy.

- **Application**

The teacher helps students practice the strategy until they can apply it independently.





One Strategy to Start
Building Background
Knowledge -
Comprehension
Canopy

Comprehension Canopy

5 minutes

- Introduce topic with motivational springboard
- Provide necessary background information

**Provide background
Information
necessary to
comprehend text**



**1. Present and
explain
(e.g., image,
video)**

**No More
Than 5
Minutes**

**Motivate
students to learn
new content**



**2. Facilitate turn
and-talk**

Purpose: Motivate Students

Oral

- Informal class survey
- Quote
- Statistic

Written

- Lines from literature
- Song lyrics
- Headline
- Primary sources

Multimedia

- Audio clip (w/ or w/o audio)
- Song clip
- Artifact
- Photo

OBJECTIVE

Provide the class the background information necessary to comprehend the text by introducing the topic of the text and by showing students the springboard images.

INTRODUCE THE TOPIC OF THE TEXT

You may already know a great deal about how plants grow. You may already know that they need water and sunlight to gather nutrients to grow. The process that plants use to transform water and sunlight into nutrients is called “photosynthesis.” Humans need nutrients, too, but we largely get them by digesting the food we eat.

Show Students the Springboard Images

Show Image 1.

Different plants grow in different areas, and each plant specially develops to grow in that area. Let me show you a few. This first plant is a kind of fern. Some ferns grow in mountains and some even in deserts, but this one grows in shady places in the rain forest. Do you notice how its fronds are very large? That’s so the plant can gather as much sunlight as possible. The plant is large and bright green because the soil is so rich in nutrients.

Show Image 2.

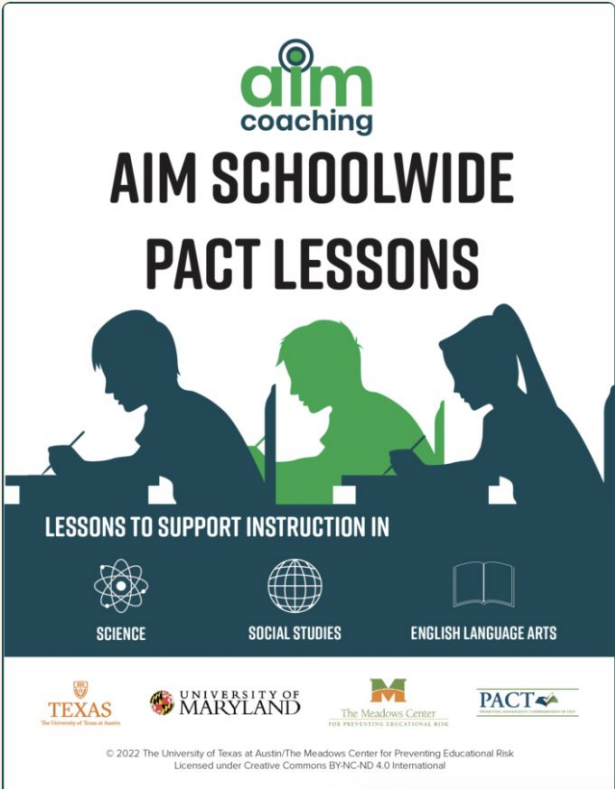
Now, let’s look at another set of plants. These plants are in the desert. Turn to your partner. Share two things you notice about how these plants grow, how they are different from the fern, and why they might be that way.

Give students about 30 seconds to discuss, and then ask a couple of groups to share.

So, plants look different based on where they grow. Today, you will learn about a plant that grows in such a difficult place that it doesn’t act like a typical plant at all!



AIM Schoolwide PACT Lessons



The poster features the AIM Coaching logo at the top, followed by the title 'AIM SCHOOLWIDE PACT LESSONS'. Below the title is a silhouette of three students at a desk, with the middle student highlighted in green. The text 'LESSONS TO SUPPORT INSTRUCTION IN' is positioned above three icons: a science atom, a social studies globe, and an English Language Arts book. The bottom of the poster includes logos for the University of Texas, University of Maryland, The Meadows Center for Preventing Educational Risk, and PACT.

aim
coaching

AIM SCHOOLWIDE PACT LESSONS

LESSONS TO SUPPORT INSTRUCTION IN

SCIENCE SOCIAL STUDIES ENGLISH LANGUAGE ARTS

TEXAS UNIVERSITY OF MARYLAND The Meadows Center FOR PREVENTING EDUCATIONAL RISK PACT

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Comprehensive Literacy State Development Grant Showcase

Youngstown City School District & Their Implementation of a Knowledge-Based ELA Curriculum, Grades K-5

- Aaron Bouie III, PK-5 Executive Director of Elementary Education
- Jodi Kosek, K-5 Instructional Content Specialist

Final Reminders

- What students read matters.
- Students should learn what they read.
- Students should review and revisit content.

Jacobsen, 2019

Connect to Practice



- What knowledge-building practices are in place in your classrooms?
- Which practices might you add?

Resources

- [Rethinking How to Promote Reading Comprehension](#), Hugh Catts
- [A Kindergarten Lottery Evaluation of Core Knowledge Charter Schools: Should Building General Knowledge Have a Central Role in Educational and Social Science Research and Policy?](#), Daniel Willingham et al
- [At long last, E.D. Hirsch, Jr. gets his due: New research shows big benefits from Core Knowledge](#), Thomas Fordham Institute
- [Dramatic New Evidence That Building Knowledge Can Boost Comprehension and Close Gaps](#), Natalie Wexler
- [AIM Schoolwide PACT Lessons](#), AIM Coaching

