

Scaffolding Expository Reading with Picture Books: Strategies for Comprehending Informational Language

Brittany Adams, Gillian E. Mertens, Zihui Fang, Marissa Baugh

How can teachers prepare young learners for the language demands of content area texts? This article presents linguistically informed strategies to support young learners navigating informational texts.

Introduction

Since the publication of the Common Core State Standards for English Language Arts in 2010, teachers and curricular programs have increasingly focused their attention on expository text (Beerwinkle et al., 2021). The National Assessment Governing Board (2022) recommends that at least half of the texts students read in fourth grade be expository in structure, with that percentage increasing every year through 12th grade to prepare students for college and career. This jarring shift from the familiar narratives and personal connections emphasized in early elementary reading activities (Duke, 2000; Pentimonti et al., 2011) to close reading of informational texts composed of unfamiliar vocabulary, dense syntax, and expository text structures poses an often insurmountable challenge to students who have not developed the necessary reading skills needed to access them (Dreher & Kletzien, 2020; Fang, 2010; Schugar & Dreher, 2017), further widening the opportunity gap between lower income students and their affluent peers (Dotson Davis, 2019).

Multiple thinking and reading processes must operate in tandem for a student to process informational text. The reader must be able to decode efficiently and effectively while strategically analyzing the text for meaning (Duke & Pearson, 2009; Peng & Goodrich, 2020). These cognitive demands are compounded as text length and complexity increase in the intermediate grades (Grades 4–6), where readers are expected to sort and categorize multiple ideas and thread them together to comprehend a central idea (Liebfreund & Conradi, 2016). Over the last several decades, scholars have suggested myriad approaches to scaffold students across this transition, many of them revolving around the strategic use of picture books in the

early grades (e.g., Li et al., 2018; Neuman et al., 2016; Quinn & Paulick, 2022; Strachan, 2015; Varelas & Pappas, 2006; Wright, 2014). This paper proposes taking up children's informational picture books with an intentional centering of the linguistic challenges inherent in informational texts. In this paper, we define informational picture books as nonfiction books that aim to convey information about the natural and social world through durable factual content presented in description, comparison/contrast, problems/solutions, and cause/effect text structures (Yopp & Yopp, 2012). Other expected features of informational texts include technical vocabulary and graphical elements such as diagrams and maps (Kotaman & Tekin, 2017; Moss, 2008).

Language-Based Challenges in Expository Reading

The qualitative dimensions of text complexity include main idea and purpose, structure, language demands, and

Brittany Adams is an assistant professor of literacy education at the University of Alabama, Tuscaloosa, Alabama, USA; email bmadams8@ua.edu.

Gillian E. Mertens is an assistant professor of literacy education at SUNY Cortland, Cortland, New York, USA; email gillian.mertens@cortland.edu.

Zihui Fang is a professor of language and literacy education at the University of Florida, Gainesville, Florida, USA; email zfang@coe.ufl.edu.

Marissa Baugh is 6th grade special education teacher for Central Square School District, Central Square, New York, USA; email mbaugh@cssdapps.org.

knowledge demands (Cummins, 2015). As a focus area for most national and state instructional standards, there are significant supports developed for the identification of author's purpose and main idea (e.g., Fang et al., 2019; Mertens & Adams, 2021; Valentino Drew, 2013). And, in children's books, many authors either support young readers through contextualizing information or use presupposed background knowledge to support student understanding of difficult concepts (Cummins, 2015). Additionally, popular content area textbooks offer many useful strategies for teaching about expository text structures (e.g., problem-solution, cause-effect, comparison/contrast, and sequencing; e.g., Duke et al., 2011; Tompkins, 2017). However, the remaining dimension of text complexity—language demands—represents opportunities for productive challenge for upper elementary readers as they grapple with complex informational texts.

Language and literacy scholars (e.g., Fang, 2008; Nagy & Townsend, 2012; Strohmaier et al., 2023; Wolf et al., 2023) have identified myriad grammatical features of informational language that present comprehension challenges to school children, including technical vocabulary, dense noun phrases, passive voice, nominalizations, modal verbs, complex clauses, and logical connectives. Attempts to illuminate or address these challenges often compare an accessible narrative text in a familiar format (picture storybooks) to a complex informational text from a science or social studies textbook, but there are many degrees between the two extremes. In response, this article proposes a pragmatic classroom approach to support upper elementary readers as they become familiar with the language demands and text structures prevalent in informational texts. By using the familiar—picture books—to reinforce the strange—unfamiliar language patterns—this approach invites elementary readers to engage closely with the linguistic features that characterize complex informational texts. In this paper, we take up the unique aspects identified by Fang (2006, 2008) that reveal how the language used to communicate specialized disciplinary information differs from everyday language conventions: technicality, abstraction, density, and authoritativeness.

For each of these four linguistic challenges, we offer strategies to scaffold students' ability to navigate complex informational texts. Although informational text offerings for elementary school students often include features designed to support students through acquiring information (e.g., Kotaman & Tekin, 2017; Mantzicopoulos &

Patrick, 2011), the linguistic challenges highlighted previously still occur with regularity within such texts and are not adequately addressed. Using a sampler of informational picture books, the following sections offer strategies for focusing on language-based informational challenges with young learners. As teachers consider implementing these strategies in their own instructional contexts, we

wish to emphasize the ongoing importance of metacognition, or awareness of one's thought processes, in skill instruction. Anytime that teachers ask students to engage with strategies, attention to students' metacognition about when, how, and why such strategies work is essential (Afflerbach et al., 2013; Urban et al., 2023).

Challenge 1: Technicality

Technicality of informational language refers to two distinct types of words or phrases: specialist terminology that is unique to a disciplinary field (e.g., *photosynthesis* in science, *hypotenuse* in mathematics, and *Jim Crow laws* in social studies) and commonplace terms that assume technical meanings when used in a disciplinary context (e.g., *volume* in geometry or *fault* in earth science) (Fang, 2008). In this sentence—*Kinetic energy is the energy in moving objects or mass—kinetic energy is a specialist term in science and mass is an everyday word with science-specific meaning.* Efficient readers of informational texts are able to navigate shifting meanings and highly technical vocabulary; however, comprehension can be impacted by jargon that populates a text.

Supporting Strategy: Morphological Analysis. One way to tackle texts that use words with technical meanings is to build on the systematic and explicit morphological instruction already occurring in classrooms (Manyak et al., 2018). Tapping into commonly taught affixes and root/base words featured in informational picture books can offer authentic reading opportunities for students to apply explicitly taught knowledge to disciplinary language "in the wild." For example, while reading a picture book about weather, teachers could introduce or reintroduce the prefix *thermo-* and discuss the meaning it conveys in terms such as *thermometer*, *thermostat*, or *thermos*. Table 1 draws from two informational picture books, *Yours 'Til Niagara Falls* (Guiberson, 2022) and *If Tigers Disappeared* (Williams, 2022), to identify some example affixes that could be worked into lessons with elementary readers.

PAUSE AND PONDER

- What specific linguistic challenges within content area texts impact reader comprehension?
- How do you prepare your students to navigate the language demands of content area texts?
- What practical strategies put students in active dialogue with informational language found in content areas?

Table 1
Morphological Analysis

Affix	Meaning	Example
accel-	increase or speed up	accelerate
agri-	field or soil	agriculture
bio-	life or living	biology, biodiversity
eco-	the environment	ecosystem
cycl-	wheel or circle	water cycle
geo-	land	geographic
hydro-	water	hydroelectric

Supporting strategy: Spotighting Discipline-Specific Vocabulary. As mentioned previously, informational texts often use words and phrases with technical meanings. A familiar narrative structure, such as that of *Yours 'Til Niagara Falls* (Guiberson, 2022), can function as a scaffold as students first learn discipline-specific terms such as *trilobites*, *crinoids*, *dolostone*, *hydropower*, *glaciers*, *coferdam*, and *boreal forest*. Similarly, teachers can use narrative informational picture books to introduce students to words that take on nonvernacular meaning in specific disciplines. The book *Mesmerized: How Ben Franklin Solves a Mystery that Baffled All of France* (Rockliff, 2015) employs several words that carry specific meaning in science contexts, such as *tested*, *observed*, *discovery*, and *conclusions*. By drawing attention to such vocabulary words and guiding discussion that delineates between vernacular and nonvernacular meaning (see Table 2 for examples), teachers can support students' acquisition of discipline-specific vocabulary through nonfiction picture books, without the addition of complex linguistic structures.

Challenge 2: Abstraction

Abstraction refers to the use of certain nonconcrete nouns (e.g., *discovery*, *frequency*, and *this problem*), called nominalizations, that derive from verbs (e.g., *discover*), adjectives (*frequent*), or sentences (e.g., *The city is overpopulated.*). Nominalizations enable authors to synthesize information

Table 2
Spotighting Vocabulary with Nonvernacular Meaning

Term	Vernacular meaning	Disciplinary meaning
Tested	To judge	To systematically evaluate using the scientific method
Observed	To look at	To evaluate while watching carefully
Discovery	To find	To gain knowledge about a previously unknown phenomenon
Conclusion	Ending	The final determination of a scientific process

from previous sentences into an abstract entity for further discussion (Fang et al., 2006; Fang, 2008). For example, take the following sentences: *Nikola Tesla invented the Tesla coil, an electrical resonant transformer circuit, in 1891. This innovation would eventually light the Chicago 1893 World's Columbian Exhibition, and was key to developing the hydropower machinery installed at Niagara Falls.* In the second sentence, *This innovation* is a nominalization that distills the information presented in the first sentence, that is, *Nikola Tesla invented the Tesla coil*, making it possible for the author to continue the discussion of the topic by explaining the significance and impact of Tesla's invention.

As another example, a text about acid rain might say, *"Since the Industrial Revolution, human activity, such as the burning of fossil fuels, has increased the amount of greenhouse gasses in the atmosphere. This increase is causing the Earth's temperature to rise."* In the passage, *this increase* is used to summarize and connect back to what was stated in the previous sentence (i.e., the increased amount of greenhouse gasses in the atmosphere) so that it becomes the departure point for subsequent discussion on the topic. While abstraction through nominalization is a common feature of informational and expository writing, frequent use of nominalizations renders a text abstract, challenging readers' comprehension (Fang et al., 2006).

Supporting Strategy: Unpacking Nominalizations. To familiarize students with this way of presenting information and structuring text, teachers can highlight and interrogate the meaning that is buried or elided in the process of nominalization. Table 3 presents noun phrases from *The Only Woman in the Photo: Frances Perkins & Her New Deal for America* (Krull, 2020) and probing questions teachers can ask to help students identify the meaning being carried across clauses, sentences, and passages.

Supporting Strategy: Identifying Actions and Their Agents. A related strategy for helping students uncover the information elided through nominalization is to have them identify nominalizations in the text and talk about the actions from which these nominalizations derive and the agents responsible for these actions (Fang, 2021). Table 4

Table 3
Unpacking Nominalizations

Nominalization	Probing questions
Mostly though, she was out of her office, initiating a blizzard of big moves, an alphabet soup of agencies. The Civilian Conservation Corps, for example, put more than two million young people to work taking care of national resources: stocking rivers with fish, planting trees, and digging canals for flood control. With this and her many other undertakings , it was thrilling for her to see how directly she was helping people	<ul style="list-style-type: none"> What does the author mean by “this and her many other undertakings?” What does “this” stand for? What may “other undertakings” be? And who performed these tasks? What evidence in the paragraph helps you answer the question?
“Frances ached to help. To do that , she realized she had to make her voice heard, even when speaking made her uncomfortable”	<ul style="list-style-type: none"> What does “that” refer to in this paragraph?
“The professor required students to observe the depressing conditions in the nearby paper and textile mills. Frances was horrified, especially at the small children toiling alongside adults. The experience opened her eyes to other injustices in America, like those she’d glimpsed as a child”	<ul style="list-style-type: none"> Reread the text before this sentence and determine what experience the author is talking about here?
“She started off delivering milk and food to starving children, giving landlords to give a break to those unable to pay their rent, and asking for donations...For these social justice issues to get proper attention, Frances believed women had to get more power”	<ul style="list-style-type: none"> Reread the passage leading up to this sentence. What are “these social justice issues” that Frances is talking about?

Table 4
Identifying Agents

Example sentence	Probing questions
While it was lawful for all adults to vote in public elections, the white ruling class in Fayette used the terror of fire and lynching to render Blacks powerless by suppressing Black voting and discouraging Black participation in the electoral process. (Duncan, 2022)	<ul style="list-style-type: none"> What forces make Blacks powerless? What is the agency behind these forces?
As human populations expand, tigers lose more and more of their natural land. Today, due to habitat loss and poaching , fewer than four thousand tigers remain in the wild. (Williams, 2022)	<ul style="list-style-type: none"> How does human population expansion impact tiger’s natural land? Who is causing the habitat loss of tigers? Who is doing the poaching of tigers?
The White Citizens’ Council, a group of segregationists, used economic reprisals to punish these men and women who added their names to the voting roster. (Duncan, 2022)	<ul style="list-style-type: none"> Who retaliated against whom? And in what way?

presents example sentences (with nominalizations bolded) from two informational picture books along with probing questions that teachers could ask students to practice identifying implicit actions and their agents.

Supporting Strategy: Sentence Completion. Teachers can also design sentence completion tasks using sentences from informational picture books. By building cloze-like

passages on the subject, students are required to synthesize their understanding from prior sentences to create a noun or noun phrase to operate as the subject of the new sentence. [Table 5](#) provides an example from a passage about whooping cranes in *Rewilding: Bringing Wildlife Back Where It Belongs* (Steen, 2022). Tasks such as these can help students recognize how nominalizations allow a writer to compress a large amount of information previously

Table 5
Cloze Passage on Whooping Cranes

Some whooping cranes migrate long distances between the areas in the United States where they find food and spend the winter (Florida) and where they go to mate and raise chicks (Wisconsin). How would the crane chicks raised in captivity know where to go each year? To help them, biologists teamed up with ultralight plane pilots! The young birds were trained to fly with the planes, originally over small distances. Once the birds had gotten the hang of it, the pilots taught them the migration route used by their ancestors. It was a sight to see the plane soaring through the sky, followed by whooping cranes in formation. Unfortunately, _____ stopped in 2016 because only a few cranes produced babies on their own. This suggested they were not learning all of the life skills they needed. [answer: these efforts]

With so few whooping cranes left in the wild, conservationists couldn't rely on just one strategy to work. Scientists hoped sandhill cranes (a closely related and relatively common species) could help raise whooping cranes and teach them how to be wild birds. In the 1970s and 1980s hundreds of whooping crane eggs were placed in sandhill crane nests for them to raise as their own. However, when those whooping cranes became adults they acted too much like their adopted parents and didn't socialize with other whooping cranes! Some even mated with sandhill cranes, creating hybrid babies known as whoophills. Despite _____, conservationists aren't giving up. [answer: these failures]

presented in the text and succinctly refer back to it for further discussion. Along with supporting decoding and comprehension, this supports students' own authoring of cohesive texts with discursive flow.

Challenge 3: Density

Text density refers to the volume of information loaded into each sentence of an informational text (Fang, 2008). Informational texts often pack a high number of lexical, or content carrying, words (i.e., nouns, verbs, adjectives, and most adverbs) into individual sentences. Extended noun phrases are a major contributor to lexical density (Fang & Pace, 2013). This is unlike in narrative texts, where simple nouns like pronouns and proper nouns are used and information is spaced out across several sentences (Fang, 2008). Fang (2008) recommends a "crude" approach for classroom teachers to identify the density

of an informational text: calculate the average number of content-carrying words per sentence. The higher the number of content-carrying words in a sentence, the denser a text, and the more challenging it is to process the text. Compare, for example, the following two brief texts:

- (a) **Nikola Tesla invented the Tesla coil, an electrical resonant transformer circuit, in 1891.**
- (b) **Nikola Tesla invented the Tesla coil in 1891. The coil is an electrical resonant transformer circuit.**

Text (a) contains one sentence with 10 content-carrying words (bolded); text (b) contains two sentences with 11 content-carrying words, resulting in 5.5 content words per sentence.

Supporting Strategy: Deconstructing Noun Phrases.

Informational texts often use long, complex noun phrases to pack information. These complex noun phrases even appear in elementary school informational picture books. In English, noun phrases can be expanded through use of modifiers (Fang, 2008). For example, the noun "question" can be expanded by adding an article (*a question*), an adjective (*a critical question*), a noun (*a critical research question*), a prepositional phrase (*a critical research question about educational inequality*), and an embedded clause (*a critical research question about educational inequality that deserves [deserving] further exploration*). These language structures convey copious information in a small package of words.

Deconstructing complex noun phrases can support elementary school students in comprehending texts containing complex noun phrases. Table 6 presents several complex noun phrases from *The Only Woman in the Photo: Frances Perkins & Her New Deal for America* (Krull, 2020), along with guiding questions that teacher can ask to support students in unpacking each noun phrase (bolded).

Authoritativeness

Text authoritativeness refers to the degree of personal involvement and expertness in presenting information (Fang, 2008, 2010). Texts written for everyday interactional purposes often feature a high degree of personal involvement and low degree of authority through the use of personal pronouns (*I, we*), interrogative sentences (e.g., *Do you know...?*), and reference to the author's mental processes (e.g., *I think, in my opinion*). Informational texts written for academic purposes, on the other hand, project a more detached, authoritative stance through the use of technical vocabulary (e.g., *synagogues*), generalized or abstract grammatical participants (e.g., *the German occupation force, ghettos, treatment of the Lodz Jews, forced labor,*

Table 6
Deconstructing Noun Phrases

Noun phrase (in bold)	Guiding questions
After getting more education in social work and publishing her own articles on the subject, Frances kept working to protect others by taking a job gathering information on unsafe workplaces	<ul style="list-style-type: none"> ■ What did Frances take? What details did the author include about the job? ■ How could we simplify this sentence while keeping the meaning the same?
Witnessing the Triangle Shirtwaist Factory fire turned Frances Perkins into an activist, so intent on helping others that she was ready to enter the all-male world of politics	<ul style="list-style-type: none"> ■ What information do we learn about Frances after the comma in this sentence? ■ Why did she become an activist? What was she willing to do?
She began taking the others on tours of work sites to view firsthand the dangers of greedy managers not protecting their workers	<ul style="list-style-type: none"> ■ Why did she become an activist? ■ What do we know about the managers?
In her new role, Frances kept arguing for change, helping to pass dozens of laws that made New York safer for workers in copper mines, construction sites, and factories all across the state	<ul style="list-style-type: none"> ■ What did Frances help pass? ■ What did these laws do in New York State?

Table 7
Paraphrasing Complex Sentences

Sentence from <i>evicted!</i>	Paraphrase
While it was lawful for all adults to vote in public elections, the white ruling class in Fayette used the terror of fire and lynching to render Blacks powerless by suppressing Black voting and discouraging Black participation in the electoral process	While all adults could legally vote, powerful Whites in Fayette used violence to stop Black citizens from voting
With guidance from attorney Estes and donations from Black landowners, like his best friend Harpman Jameson, John and the League drafted a charter to wield collective power and increase Black voters in Fayette County	John and the League got help from Fayette's lawyers and donations from Black landowners, and they worked together to increase Black voters
And Black sharecroppers lost wages as they left the fields to be greeted by gangs of white folk, who cursed, threw rocks, and poured hot coffee on their faces to suppress their will to vote	Black sharecroppers faced violence from White people as they tried to vote
The White Citizens' Council, a group of segregationists, used economic reprisals to punish these men and women who added their names to the voting roster	A group of pro-segregation White people fined Black citizens for registering to vote

confiscation of property, Jews), declarative sentences, passive voice (e.g., *was blown up, was sealed*), and complex syntax with implicit logical-semantic links (Fang, 2010). The following text from *The World Must Know* (Berenbaum, 2006, p. 79) demonstrates some of these practices:

The German occupation force was particularly ferocious in its treatment of the Lodz Jews. In addition to forced labor and confiscation of property, synagogues were blown up.

When the ghetto was sealed in April 1940, 164,000 Jews lived in 48,100 rooms, most of them without running water or sewer connections.

Supporting Strategy: Paraphrasing Complex Sentences. Teachers can help students cope with the authoritative style of informational writing through the strategies presented earlier, as well as additional strategies such as

Table 8
Creating Complex Sentences

Passage	Example paraphrase
In 1900, there were an estimated one hundred thousand tigers in the wild, but from 1900 to 2000, tiger populations declined by 96 percent. As human populations expand, tigers lose more and more of their natural land. Today, due to habitat loss and poaching, fewer than four thousand tigers remain in the wild	Because humans intrude into the wild, tiger populations have declined from one hundred thousand to four thousand over a hundred years
With few other apex predators to help control the populations of these large mammals, their patterns of eating, denning, and walking through the forest would slowly erode waterways and change the landscape the water runs through. This would affect plant growth patterns, making it impossible for some species of natural flora and fauna to survive	If tigers weren't around to eat large mammals, these mammals' living patterns would change the environment for other species

Table 9
Syntactic Anatomy

Sentence from text	Probing questions
While it was lawful for all adults to vote in public elections, the white ruling class in Fayette used the terror of fire and lynching to render Blacks powerless by suppressing Black voting and discouraging Black participation in the electoral process. (Duncan, 2022)	<ul style="list-style-type: none"> ■ What does “while” mean? What clause is most important in this sentence? ■ What is the relationship between the dependent clause (introduced by “while”) and the main clause (introduced by “the white ruling class”)?
Using a slide rule, Mary made calculations that told her exactly how each fuel mixture would make a rocket fly—without launching a single rocket! (Slade, 2022)	<ul style="list-style-type: none"> ■ How did Mary calculate? ■ What did her calculation reveal?
Meanwhile, navy engineers were furiously working on a different rocket that they hoped would launch. (Slade, 2022)	<ul style="list-style-type: none"> ■ What did the navy engineers expect the rocket to do?
It was a fine example of a fossil, the remains of a plant or animal that have turned to stone over time—just like Mary's other treasures. (Glenn Marsh, 2022)	<ul style="list-style-type: none"> ■ What detailed information was provided about the fossil?
A new way to help fight injustice, called social work, was flourishing there. (Krull, 2022)	<ul style="list-style-type: none"> ■ What is another name for “the new way to fight injustice”?
They formed their own government, organized alarm riders to warn of British troop movements, and armed town militias—minutemen—ready to fight at a moment's notice. (Anderson, 2022)	<ul style="list-style-type: none"> ■ In what ways were they getting ready to fight at a moment's notice? ■ What is another name for “minutemen”?

paraphrasing and syntactic anatomy (Fang, 2010). In informational texts, complex sentences are often used to present dense information and build logical arguments (Schleppegrell, 2004). These sentences encode layers of semantic links and dependency relationships that may not always be obvious to naïve readers, thus auguring a need for slow reading to ensure comprehension (Fang, 2024). Through paraphrasing activities, students can work to translate lexically dense or grammatically complex

sentences with opaque logical-semantic links into everyday language, where logical-semantic links are more transparent. Table 7 provides sentences from *Evicted! The Struggle for the Right to Vote* (Duncan, 2022) and examples of less complex renditions of these sentences.

Alternatively, students can be encouraged to rewrite a passage from a picture book to practice compacting information through creating logical-semantic links. For example, students may consider consolidating information from

three sentences into either a complex sentence using subordinating conjunctions to prioritize or subordinate information. Table 8 provides one such example from *If Tigers Disappeared* (Williams, 2022).

Supporting Strategy: Syntactic Anatomy. Teachers can help students hone their facility with authoritative discursive practices through syntactic anatomy or identify relations among different clauses in a sentence. Comprehension of informational texts necessitates consideration of both linguistic choices and discipline-specific knowledge (Sweller et al., 2011). Teachers could ask probing questions to help students unpack linguistic complexity and engage in close reading of text. Table 9 presents sentences (some more complex, others less complex) from a range of informational picture books with which students could practice identifying inter-sentence relationships by trying to answer the probing questions.

Conclusion

The increasing pressure on K-12 educators to focus on informational texts in content area learning continues to present challenges for classroom educators. Although it is widely acknowledged that informational texts are linguistically demanding, there is a gap between recognizing that these texts are challenging and implementing language-specific strategies to support upper elementary students' comprehension of these challenging texts. The strategies explicated in this article are linguistically informed approaches to support student engagement with the language of informational text. They help teachers introduce young learners to the sometimes-strange and often-novel language used to convey discipline-specific content in non-fiction picture books. While this article stayed close to the

language of the example picture books, future research could examine the illustrations as potential sources of support to prepare elementary students for disciplinary reading.

In sum, incorporating authentic informational picture books into instruction may help upper elementary students develop a sensitivity to the unique language patterns found in informational texts across the reading lifespan. As students move into secondary education, instruction begins to increasingly depend on students' capacity to independently read and comprehend informational language in content area texts. Providing students with language-based strategies supports their engagement with and comprehension of informational texts and promotes their language learning at the same time.

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TAKE ACTION!

1. Select an informational picture book intended for use with young learners.
2. Closely review the book's language for specific language demands including technicality, abstraction, density, authoritativeness, and specific disciplinary vocabulary. Prioritize one to two of these dimensions to unpack with learners.
3. Select one to two strategies to support students through the language challenge in each book. Use tables and exercises from this article to create language-focused activities. Ensure that all activities focus on supporting students in making meaning from text.

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