



***Tech Bytes* Classroom Library Collection**

Collection Description

The books in the *Tech Bytes* series explore some of the most fascinating innovations and inventions of our time.

Readers will learn about how these great ideas began, how they were developed, and how they have become a part of our lives.

The Role of Informational Text in Reading

Some education researchers have attributed the 'fourth-grade slump' in overall literacy achievement in large part to problems with informational literacy. (Chall, Jacobs, and Baldwin, 1990)

Not surprisingly, when students are introduced to science and social studies textbooks for the first time in third grade, many of them experience some difficulties reading and comprehending these new kinds of texts. The skills and strategies they have learned through working only with fiction do not transfer seamlessly to informational texts. Not only are students faced with having to understand new content, but also with additional ways of accessing and processing information. (Hoyt, Mooney, & Parkes, 2003)

Scholars have pointed out that informational texts can play an important role in motivating children to read in the first place. Some young children find a way to literacy through informational texts that they do not find through narrative and other forms of text. (Caswell and Duke, 1998)

Informational texts can capitalize on children's interest and curiosities, provide opportunities for children to apply and further develop areas of expertise, and provide valuable links to children's home literacy experiences. (Caswell & Duke, 1998; Duthie, 1996; Guthrie & McCann, 1997; Moss, Leone, & DiPillo, 1997; Oylar, 1996)

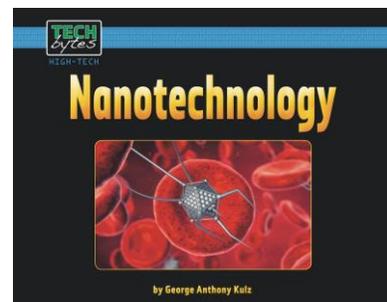
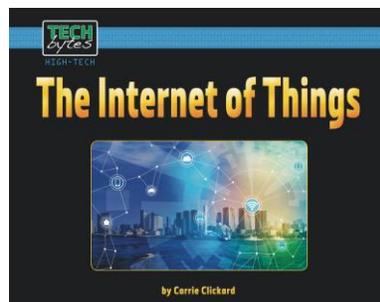
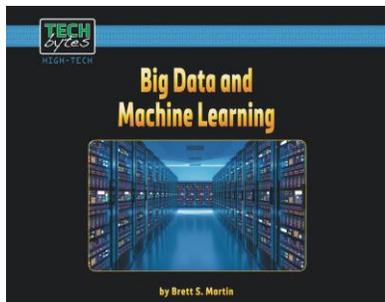
A number of mechanisms have been suggested by which informational text may support overall literacy development. One relates to the notion...that informational text may build background knowledge, vocabulary, and comprehension skills, which may, in turn, support reading of all kinds. (Duke, Bennett-Armistead, & Roberts, 2003)

Children in classrooms with more informational text had the same levels of overall reading and writing achievement as children in comparison classrooms. These students also did not show the decline in attitudes toward recreational reading that was found among students in the comparison classrooms. (Duke, Bennett-Armistead, & Roberts, 2003)



Titles in *Tech Bytes* Classroom Library Collection

1. Wearable Robots
2. Self-Driving Car
3. Artificial Eyes
4. 3-D Printing
5. Virtual Reality
6. Military Robots
7. Coding
8. Augmented Reality
9. Personal Drones
10. Nanotechnology
11. The Internet of Things
12. Big Data and Machine Learning



Informational Text Features

Informational text not only includes content and vocabulary that distinguishes it from narrative fiction, the way in which the expository text is organized and looks on the page presents new concepts for readers to learn in order to comprehend. The physical presentation of the informational text can be overwhelming for some children. Teaching children the functions of each feature and how to use them can help them access the content more easily.

Teaching Informational Text Features: What and Why

Features—What	Function—Why
Table of Contents Index Glossary Headings & Subheadings	To efficiently glean information and make decisions about what to read
Bold, Colored, or Italicized Print	To determine why authors use these to highlight particular text
Charts, Diagrams, Maps, Drawings, and other Forms of Visual Literacy	To access and interpret the information in concert with written text
Photographs	To look for detail, draw inferences, and connect with written information
Captions, Labels, and Continuous Text	To read and integrate this information

Adapted from: Hoyt, L., Mooney, M., Parkes, B., (1993).

Informational Text Structures

Five Text Structures Commonly Found in Nonfiction Text

Text structure refers to the organizational pattern used to present written information. Often, texts that are constructed according to a text structure or pattern are easier to read, understand, and remember.

Text Structure	Description	Key Words
Descriptive <i>(Persuasive is a subset of descriptive)</i>	Details about characteristics, actions, etc. Emphasis on key ideas and supporting details.	for example, most importantly, also, in fact adjectives and strong verbs are common
Time Order, Sequence, or Temporal Sequence	Ideas or events are organized in order of occurrence.	before, next, after, second, finally, during, until, now, not long after
Compare/Contrast	Points out likenesses (compare) and differences (contrast) among facts, people, concepts, and events.	however, on the other hand, although, either, but also, otherwise, same as, similarly
Cause/Effect	Demonstrates how some facts, events, or concepts happen because of other facts, events, or concepts.	because, since, thus, a reason for, conclude, consequently, due to
Problem/Solution	Factual accounts that state a problem and its resolution(s). Often includes an examination of cause and effect.	the question is, the evidence shows, propose, conclude, this led to, accordingly, if...then, so that, thus

Source: Hoyt, L., Mooney, M., Parkes, B., (1993).

Teaching Tips for Tech Bytes Books

Hook the Book:

Engaging students in the topic is the best way to excite them about reading more. Rather than starting with the book itself, check out the list of web sites in the back and select one or more to spark students' interest. Here are a few recommendations to get you started and get your students hooked:

Book	Web Site	Hook
Big Data and Machine Learning	How Does Santa Use Big Data video https://youtu.be/EeSzY6pdPM4	Georgetown University created a video to explain how big data works relating it to how Santa knows how to find the perfect gift.
The Internet of Things	Wikipedia - internet of things https://en.wikipedia.org/wiki/Catagory:Internet_of_things	Kids will want to know what qualifies as being part of the "Internet of Things. Show them the list and talk through it.
Nanotechnology	http://www.nanooze.org/	Browse the latest issue of Nanooze magazine put out by Cornell University to explain nanotechnology to K-12 students.
Personal Drones	Code Drones with Tynker https://www.tynker.com/	Tynker is a website that helps children learn how to code. Try one of the coding drones projects for an introduction to drones.
Augmented Reality	National Geographic video video.nationalgeographic.com/video/augmented-reality-sci	Shows students that AR has a path in education and what the latest advances are in the field.
Coding	Try Coding on Tynker https://www.tynker.com/	A free website that shows kids how to do simple coding. Build an app with your class!
Military Robots	Short Circuit movie trailer https://youtu.be/jNavzq6WbAU	Military robotics have come a long way from Short Circuit, but this shows that this has been a topic for conversation for some time. Talk with your students about the pros and cons of military robots.
Virtual Reality	Thought Café "What You Need to Know about Virtual Reality" Vide https://youtu.be/5EMsP8enIk	With a list of vocabulary linked to virtual reality, start to get your students used to the terminology that surrounds VR. A great intro to the topic.
3-D Printing	Thingiverse Education https://www.thingiverse.com/education	This website is a catalog of hundreds of free lessons on what you can create with a 3-D printer by grade level. Get yours students excited by picking out a project to work on.

Artificial Eyes	Montreal Gazette: Quebec's First Bionic Eye recipient video https://youtu.be/j8kAFYQBPWI	Meet Quebec's first bionic eye recipient and show students the reality of how this technology impacts lives.
Self-Driving Car	Mashable Video https://youtu.be/FCdYq3AhCFc	Give your students an introduction to self-driving cars with a video game lens.
Wearable Robots	CNBC article on Delta outfitting employess in wearable robots https://www.cnn.com/2018/03/23/delta-air-lines-may-outfit-some-employees-with-wearable-robotics.html	Talk with students about this idea and use it as an introduction to other uses for wearable robots in the future.

More Teaching Tips for Tech Bytes Books

Text Features Scavenger Hunt:

Previewing informational text, by locating special features, can engage students, activate prior knowledge, and build background, which supports comprehension. Use the graphic organizer on page 8 to encourage individuals and/or partners to explore the text, noting features in the text and selecting those of interest to build background for reading the book.

Vocabulary Trading Cards:

- Select twelve words from the glossary (use the graphic on page 9).
- Assign each student 3 vocabulary words. Be sure to hype the fact that they only have to “do” 3 words each (i.e., you’re not requiring them to look up all of the words).
- Students write the word, definition, sentence from the text, and an original sentence on 4 separate trading (i.e., index) cards.
- Students circulate and trade cards for 3-5 minutes.
- Students record acquired cards on their “album.” (p. 8, need two-sided copies for 12 words)
- Students circulate again for 3-5 minutes to collect cards—repeat this until each student has most of the words.
- Encourage students to draw a simple illustration for each word trading card.
- Post one complete set of cards (e.g., in pocket chart) so students can acquire any missing cards.

Making Connections:

Encouraging students to reflect on their learning requires them to make inferences by connecting the book and the world, other texts, or to one’s self. According to Keene and Zimmerman (2007). Making connections promotes active reading that results in deeper understanding. Students develop strategies that they can apply to future reading.

Text to Self <i>Utilizing personal schema/ background knowledge</i>	Text to Text <i>Utilizing knowledge of related books/text/style</i>	Text to World <i>Utilizing specific topic or world knowledge</i>
How does ___ directly or indirectly relate to my life—now or in the future?	What else have I read that reminds me of ___? How are they related?	How has ___ made a difference or changed the world?

Informational Text Features Scavenger Hunt

Book Title: _____

<i>Feature</i>	<i>How Many</i>	<i>Example(s)</i>	<i>Page</i>	<i>Why it is interesting or makes you want to know more</i>
Table of Contents (Chapters)		Chapter you are most interested in reading.		
Photograph		Find a photograph that interests you. Write the caption.		
Heading		Write the text of a heading that interests you.		
Diagram		Draw a diagram found in the book—include labels. If there are not diagrams, create one of your own.		
Special Type		Find two examples of text that are bolded, italicized, or have a different font, size, or color.		
Glossary		Write the definitions of two words that are new or interesting to you.		
Index		Which topic has the most page numbers listed?		

Vocabulary Word Trading Card Album

Book Title: _____

Word: Definition: Text Sentence: My Sentence:	Word: Definition: Text Sentence: My Sentence:	Word: Definition: Text Sentence: My Sentence:
Word: Definition: Text Sentence: My Sentence:	Word: Definition: Text Sentence: My Sentence:	Word: Definition: Text Sentence: My Sentence:

Creative Responses to Informational Text:

Beyond book reports, these forms of writing allow students to present information in authentic, real-world applications.

1. Advertorial—a hybrid between an advertisement and an editorial that provides information to persuade.
2. Brochure—provides text, images, and text features to describe a particular product/innovation in order to inform. If the history of the innovation is presented, it also utilizes time/order, sequence, and temporal structures.
3. News Broadcast—a format that presents a new discovery using spoken language and images. This format focuses on descriptive and cause/effect structures. If the history of the innovation is presented, it also utilizes time/order, sequence, and temporal structures.
4. Owner’s Manual—technical manual that describes the innovation, provides illustrations and/or diagrams, and explains how it works. This format focuses on descriptive, cause/effect, and problem/solution structures.
5. Public Service Announcement—video commercial that informs the public about the need for or importance of the innovation. This format focuses on persuasive (descriptive), cause/effect, problem/solution, and possibly compare/contrast structures.

Assessment—Comprehension:

The following comprehension questions are aimed at helping students reference the text in order to gather salient information regarding the technology featured. These questions are aimed at helping students not only recall information, but also develop research skills by noting the page numbers where the information can be located.

- How did ____ get its name?
- Why was ____ invented?
- How is ____ similar/different than the original invention?
- Who uses or could use ____?
- Why is ____ innovative?

Common Core State Standards for English Language Arts & Literacy

The **Common Core State Standards** for English Language Arts & Literacy emphasize the importance of informational text (p. 5):

In K–5, the Standards follow NAEP’s lead in balancing the reading of literature with the reading of informational texts, including texts in history/social studies, science, and technical subjects. In accord with NAEP’s growing emphasis on informational texts in the higher grades, the Standards demand that a significant amount of reading of informational texts take place in and outside the ELA classroom.

Reading Standards for Informational Text—Third-Fifth Grade

Grade 3 Students:		Grade 4 Students:		Grade 5 Students:	
Key Ideas and Details					
1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	1	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	1	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
2	Determine the main idea of a text; recount the key details and explain how they support the main idea.	2	Determine the main idea of a text and explain how it is supported by key details; summarize the text.	2	Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
3	Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.	3	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.	3	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
Craft and Structure					
4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a <i>grade 3 topic or subject area</i> .	4	Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a <i>grade 4 topic or subject area</i> .	4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a <i>grade 5 topic or subject area</i> .
5	Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently	5	Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.	5	Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.
6	Distinguish their own point of view from that of the author of a text.	6	Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.	6	Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.
Integration of Knowledge and Ideas					
7	Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).	7	Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.	7	Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
8	Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).	8	Explain how an author uses reasons and evidence to support particular points in a text.	8	Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).
9	Compare and contrast the most important points and key details presented in two texts on the same topic.	9	Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.	9	Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.
Range of Reading and Level of Text Complexity					
10	By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2–3 text complexity band independently and proficiently.	10	By the end of year, read and comprehend informational texts, including history/ social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10	By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4–5 text complexity band independently and proficiently.

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