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Please enjoy this complimentary excerpt from *Text Complexity* by Douglas Fisher, Nancy Frey, and Diane Lapp .
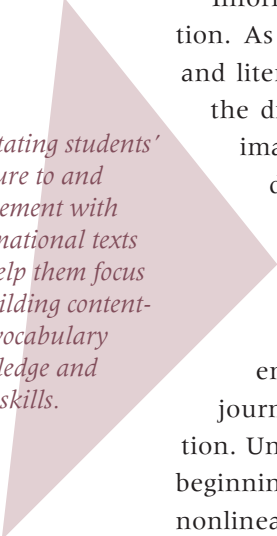
Qualitative Aspects of Informational Texts

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Learning about the physical, social, and biological world is an important aspect of the curriculum in most of today's schools. Students are expected to read, write, and think about history and other social sciences, physical and life sciences, and a wide range of technical subjects. From the time they enter school until they transition to college and then on to careers, students are immersed in the world of information. That's to say not that literary texts should be neglected, but rather that informational texts are an essential aspect of the curriculum. Unfortunately, in the push to increase students' reading proficiency, some schools and districts have cut down—or even entirely removed—blocks of time for social studies and science (e.g., Howard, 2003).

We see this as wrongheaded because informational texts, such as those used in history and science, facilitate students' reading development, help shape students' understanding of the world, and build their habits of inquiry (Maloch & Horsey, 2013). Fortunately, helping students learn from informational texts, not just textbooks, has received a great deal of attention in the last decade. Facilitating students' exposure to and engagement with these texts can help them focus on building content-area vocabulary knowledge and study skills and on becoming proficient with the use of tools such as graphic organizers and note-taking guides (Altieri, 2011). These valuable knowledge and skill sets are important avenues through which students can refine their habits for interacting with—and understanding—informational texts.

▶ Characteristics of Informational Texts

Facilitating students' exposure to and engagement with informational texts can help them focus on building content-area vocabulary knowledge and study skills.

Informational texts rely primarily on exposition rather than narration. As noted in the previous chapter, we do not sort informational and literary text types into fiction and nonfiction, because it obscures the differences in text construction. Literary texts, whether true or imagined, typically employ narrative forms. Informational texts describe, explain, and inform the reader. Biographies and auto-biographies, for instance, use a narrative form to convey experiences, and because of that, their structure is best analyzed using the literary text scale in the previous chapter (see Figure 3.2). Informational texts, particularly documents, encyclopedia entries, reference books, technical guides, scientific journal articles, reports, and question-and-answer text, use exposition. Unlike narrative forms, which are primarily linear (i.e., there is a beginning, a middle, and an end to the story), informational texts are nonlinear. Instead, their major point of organization centers on a process or phenomenon.

Informational texts that use an expository form are characterized by elements that can challenge a reader's comprehension. All texts, oral as well as written, can be analyzed by considering the field, tenor, and mode of a piece (Halliday, 1985). *Field* refers to the topic or subject of the text, and answers the question, "What is the text about?" Informational text fields cover the physical, biological, and social worlds, and are commonly used in science, history/social science, mathematics, and technical subjects.

The *tenor* of a text describes the relationship between the writer and the reader. The tenor of informational texts is typically authoritative and may be somewhat socially distant. Writers of informational texts written for younger readers, or for novices on a given topic, may bridge this social distance by making the text more personal, addressing the reader directly (i.e., use of personal pronouns such as *I* and *you*). Writers of informational texts may convey their expertise through the accuracy of the text and may also adopt a stance that does or does not allow the reader to disagree with the text. The *mode* of a text answers the question, "How was this produced?" A speech, for instance, functions foremost in its oral form, although it has a secondary written form as well. The writer of a newspaper article might have interviewed others about a topic, but reported the outcomes of these discussions more formally than when they were initially conducted face-to-face. A scientific journal article functions solely in written form, and is therefore a much more formal mode. Each of these modes carries with it an expectation of how the information will be organized. Mode also describes the rhetorical nature of the text: is it meant to inform, to persuade, or to make an argument through the use of formal reasoning? Taken together, the variables of field, tenor, and mode describe the register of academic writing, with each contributing to the complexity of an informational text.

▶ Analyzing Informational Texts Qualitatively

Given the unique characteristics of informational texts that use exposition, we have developed a second complexity scale for this text type. The impetus to do so was Sherrye Dee Garrett at Texas A&M University–Corpus Christi and two of her students, Jeannette Gomez and Lindsay Bingaman. While they found the qualitative scale published in the first edition of this book to be useful for analyzing literary texts, they struggled with using it for informational texts that relied on exposition. This led to a rich discussion among them about the nature of informational texts, and they ultimately produced the scale found in Figure 4.1. The intent of this scale is to reflect Halliday's (1985) model of analyzing texts through the lens of field, tenor, and mode. In order to increase its ease of use, the scale is organized into the same categories, with one exception, which is the substitution of the category of narration for that of voice.

Figure 4.1 Qualitative Scale of Informational Texts

Score	1 point (Comfortable) Texts That Are Comfortable and/or Build Background, Fluency, and Skills	2 points (Grade Level) Texts That Require Grade-Appropriate Skills	3 points (Stretch) Texts That Would Stretch a Reader and/or Require Instruction
Levels of Meaning and Purpose			
Density and Complexity	Single and literal levels of meaning are present; meaning is explicitly stated.	Multiple layers of specific content are present. Some information must be inferred or integrated with previous content.	Significant density and complexity, with multiple layers of content topics, are present. The reader is expected to critique or evaluate information.
Analogies and Abstract Comparisons	There is limited use of analogous statements. Language relies on literal interpretations.	Analogies and metaphors are used to help the reader make connections between new concepts and the reader's knowledge. These associations draw on familiar processes and phenomena.	The metaphors and analogies used are more abstract and require sophistication and depth of knowledge from the reader. The process or phenomenon used to make a comparison itself requires prior knowledge.
Purpose	The purpose is directly and explicitly stated at the beginning of the text and is in evidence throughout the text.	The text serves both explicit and implicit purposes, which become evident with close inspection of the text.	The text may involve multiple purposes, some of which may be implicit; it requires the reader to critically analyze across texts to discern implicit purposes.
Structure			
Genre	The text exemplifies conventional characteristics of one familiar genre.	The text exemplifies one genre, but deviates from typical characteristics of that genre.	The text is presented as a specific genre, but includes other embedded genres.
Organization	One conventional organizational pattern predominates throughout the text. Signal words and phrases are overt and numerous.	More than one conventional organization pattern is included in the text. Signal words and phrases are present.	The text may include a variety of conventional organizational patterns, which are dictated by text content, but with little notification or guidance to the reader.

Score	1 point (Comfortable) Texts That Are Comfortable and/or Build Background, Fluency, and Skills	2 points (Grade Level) Texts That Require Grade-Appropriate Skills	3 points (Stretch) Texts That Would Stretch a Reader and/or Require Instruction
Text Features	The text contains familiar access features such as a table of contents, headings/subheadings, a glossary, and an index.	The text contains conventional access features, but also includes detailed information in sidebars, insets, and bulleted lists.	The text contains access features that require the reader to integrate extratextual information, such as preface/prologue, afterword/epilogue, and author/illustrator notes.
Graphic Elements	The text contains familiar graphic elements such as simple diagrams, maps, timelines, photographs, and illustrations with captions. Graphic elements repeat information in the text.	The text contains graphic elements that require interpretation, such as graphs and tables, scale diagrams, and webs. Graphic elements have additional information that supplements the text.	The text contains graphic elements that are less familiar to students and require interpretation, such as cross sections, cutaways, and range and flow maps. Graphic elements have information that complements and is integrated with text.
Language Conventionality and Clarity			
Language Level	The language used is appropriate to the developmental and experiential level of the student.	There is some distance between the text language and the developmental and experiential language level of the student.	The text language uses language conventions and structures unfamiliar to the student, especially those that reflect voices found in specific content areas.
Register	The register is casual and familiar. Humorous language may be used throughout to engage the reader in the information.	The register is consultative or formal, and may be academic, but acknowledges the developmental level of the reader. Humorous or casual language may be used in titles and headings/subheadings.	The register is domain-specific, formal, and/or scholarly.

(Continued)

Figure 4.1 (Continued)

Score	1 point (Comfortable) Texts That Are Comfortable and/or Build Background, Fluency, and Skills	2 points (Grade Level) Texts That Require Grade-Appropriate Skills	3 points (Stretch) Texts That Would Stretch a Reader and/or Require Instruction
Voice	Information in the text is presented in a straightforward way. Text may use second-person language and a personal tone to draw the reader into the text.	Vocabulary and diction invite the reader's curiosity about the text content while presenting information with an authoritative tone.	Strong authoritative voice dominates the text. Text language is used to impart knowledge to the reader and makes little effort to engage the reader on a personal level.
Knowledge Demands			
Background Knowledge	The content closely matches the reader's primary lived experiences and secondary experiences gained through other media.	The content represents a distance between the reader's primary and secondary experiences, but the text provides explanations to bridge the gap between what is known and unknown.	The content demands specialized knowledge beyond the primary and secondary experiences of the reader and provides no bridge or scaffolding between known and unknown.
Prior Knowledge	Prior knowledge is needed to understand the text, which is familiar and draws on a solid foundation of practical, general, and academic learning.	Subject-specific knowledge is required but is augmented with review or summary of information.	Specialized or technical content knowledge is presumed; little review or explanation of these concepts is present in the text.
Vocabulary Knowledge	The vocabulary is controlled and uses the most commonly held meanings; multiple-meaning words are used in a limited fashion.	The vocabulary draws on domain-specific, general academic, and multiple-meaning words, with text supports to guide the reader's correct interpretations of their meanings; it represents familiar concepts and ideas.	The vocabulary demand is extensive, domain-specific, and representative of complex ideas; little is offered in the way of context clues.

Source: Adapted by Sherrye Dee Garrett, Jeannette Gomez, and Lindsay Bingaman.

▶ Levels of Meaning and Purpose

Like narrative texts, informational texts can have surface levels of meaning as well as deeper implications. Informational texts often present facts and dates, but the reading of this information is not always straightforward. Often, the author provides factual information for the reader to consider and includes ideas and perspectives that challenge the reader.

Density and Complexity

Density refers primarily to lexical density and conceptual load. Lexical density is increased when words are nominalized, meaning that a verb or adjective is turned into a noun. Science and social science texts are loaded with nominalizations (*resist* becomes *resistance*, *different* becomes *difference*). When affixes are applied, the terms become even more challenging (*careless* becomes *carelessness*). In addition, informational texts feature technical terms associated with the topic. For example, a passage about the periodic table of elements is likely to contain words and phrases such as *isotopes*, *instability*, *atomic number*, and *electron configurations*. Now factor in the conceptual load—that is, the number of ideas—that are packed into a few sentences.

By way of example, this short passage appears in *The Story of Money* (Maestro, 1995), which has a quantitative measure of 890L, a score measuring the factors that can be quantified, thus placing it in the Grade 4–5 range:

> The world has entered an electronic age and the latest form of cashless money is stored in bank computers. People can have their paychecks electronically added to their bank accounts. Their bills can then be paid directly by the bank using advanced communication systems. No actual money changes hands.

A number of content-specific terms are used (*cashless money*, *paychecks*, *bank accounts*), as well as a nominalization (*communication*). In addition, the conceptual load includes abstract ideas ("The world has entered an electronic age," and paychecks are "electronically added" to bank accounts, through "advanced communication systems"). And just to make it a little bit more dense, let's add some figurative language: "no actual money changes hands." Those four sentences cram a lot of information into a very short passage, with little elaboration or restatement.

Many informational texts—especially those that focus on a single topic—have a clear, explicit meaning. More complex texts may include nuanced information about the topic and related issues, and may reveal the writer's attitude toward the subject, thereby inviting the reader to evaluate and critique the information. The book *Shark Attack!* (Tuchman, 2013) is written for second-grade reading instruction. The first part of the book provides factual information about sharks' history, sizes, habitat, and food sources. The later pages say that sharks are both "terrifying and beautiful" (p. 28) and we should "keep the seas swimming with supercool sharks" (p. 29). This language goes beyond facts and presents the author's attitude about shark conservation and protection. Readers need to be ready to evaluate the different levels of meaning that may be present in a text.

Analogies and Abstract Comparisons

In general, informational texts do not employ the wide range of figurative language found in literary ones—at least in the conventional sense. However, writers of informational texts commonly use similes, metaphors, and analogies to compare a familiar process or phenomenon to an unfamiliar, abstract concept. This assists readers in linking their prior knowledge to new information.

In *Blood*, an informational text for elementary students, the author writes that "[r]ed blood cells are like delivery trucks that begin at the heart, then make their first stop at the lungs" (Ring, 2002, p. 12). In a *Scientific American* article titled "Untangling the Roots of Cancer," the writer states that "[t]he immediate cause of cancer must be some combination of insults and accidents that induces normal cells in a healthy human body to turn malignant, growing like weeds and sprouting in unnatural places" (Gibbs, 2003). These analogies work well when they are understood by the reader, but they also tax the reader to rapidly analyze the properties or processes the writer is referring to, and then apply them abstractly to newer information. In other words, the reader needs to be able to determine the degree to which the characteristics of one property or process are similar to those of another. For this reason, analogies and other metaphors used to represent abstract processes may need to be highlighted.

Purpose

The complexity of an informational text is increased when the purpose is not clearly stated, or when the apparent purpose differs from the stated purpose. There is a wide range of informational texts that do not have an

explicitly stated purpose, such as *Animal Disguises* (Weber, 2004). It's clear that this book about camouflage in nature provides information for the reader, but it does not come right out and tell you what the purpose is and what to expect. Accordingly, it is a little more complex than a book that explicitly says something like, "In this section, we will focus on camouflage as one of the ways that animals can disguise themselves."

Comparisons between multiple texts can also reveal conflicting purposes, and speeches and other historical documents often chronicle these implicit and explicit purposes, especially in light of events that serve to contextualize their creation. Those delivered by leaders during times of war are often ripe for discussion about stated and implicit purposes. For example, General Dwight D. Eisenhower wrote a message to the Allied troops dated June 6, 1944, as they embarked on the D-Day invasion. It was inspiring, and the general conveyed his confidence in their skills. But tellingly, he also drafted a memo to be delivered in the event the operation failed, suggesting that even as he composed the former, he was also preparing for the worst. By comparing these two documents with the historical record, students are able to see how Eisenhower's purposes for both are revealed (Fisher & Frey, 2013).

▶ Structure

All texts are governed by organizational structures that allow readers to experience the ideas or information coherently. Narrative forms rely on a story grammar structure, while informational texts use exposition. These organizing principles are further realized and expressed through specific genres characteristic of the field, all of which employ expository text types to create a comprehensible flow of information. The structure and organization of a given text is also further enhanced through the use of text features and graphic elements.

Genre

In part, texts within a specific genre may present as difficult to students, depending on their past reading experiences with these genres. If students have a lot of experiences with reading and using a procedural text to assemble an item, for example, then another text in that genre may be easier for them to manage. Alternatively, if they have not had a lot of experience with persuasive speeches, for instance, then understanding Martin Luther King's "I Have a Dream" speech will be more difficult. Recognizing this
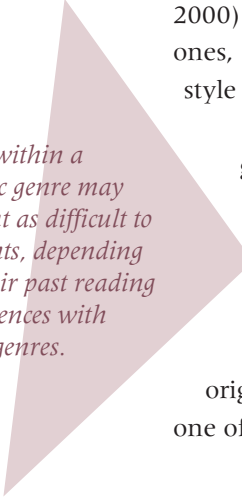
is particularly important in the elementary grades, where young students historically have had limited experience with informational texts (Duke, 2000). Informational text genres are frequently more difficult than literary ones, in part because students have been undertaught the conventions or style of a particular text.

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At a more discrete level, students should recognize textual sub-genres and traits that are associated with a discipline (Shanahan & Shanahan, 2008). For example, historical texts include primary and secondary sources. Primary sources were not written for schoolchildren, and are often more challenging because students are not the intended audience. Some primary source documents are edited to facilitate comprehension, while others are left in their original form. Consider the preamble to the U.S. Constitution, arguably one of our nation's most important documents:

> We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defense, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America.

While not an easy read, it is worthy of a reader's efforts to understand it in its original form. Students may, for instance, struggle with ideas in the preamble that relate to the text's genre (historical document) as well as to the time of its development: the questions of who the "*we*" is referring to, why some words are capitalized, what domestic tranquility is, why "more perfect" was selected rather than "perfect."

In science, different or alternative representations of an idea (e.g., pictures, graphs or charts, text, or diagrams) are essential for a full understanding of the concepts. Readers of science genre texts (reports, lab results, visual representations of quantitative data) must continually move back and forth between text and visuals to fully understand the concepts presented. Scientific information is also found in reference books, which may require the reader to search an online encyclopedia for technical information about a term. Unlike lab results, which should invite a critique, the definition of *mollusk* should not. Science students need instruction on when and how to critique certain genres, while recognizing when more objective information sources are used.

Organization

In terms of structure, there is significant evidence that the manner in which a text's ideas or topics are arranged and related impacts students' comprehension (Bakken & Whedon, 2002; Ciardiello, 2002; Parsons, 2001). The most common informational text structures are as follows:

- **Descriptive.** Rich and detailed information about a process, procedure, action, or phenomenon is presented.
- **Compare and Contrast.** Similarities and differences between two concepts are explained.
- **Temporal Sequence.** Events change or remain the same over time, and are explained in chronological order.
- **Cause and Effect.** An event is explained in terms of its effect, using temporal precedence (i.e., a cause must occur before the effect).
- **Problem and Solution.** A problematic situation or issue is presented, as is an explanation of how it was resolved.

The different structures are often signaled to readers through the use of key words and phrases. Words that signal a descriptive/list organization include *for example* and *in addition*, and may even include enumerated facts. Signal words and phrases for a text with a compare/contrast organization include *however* and *on the other hand*. Cause-and-effect structures are signaled to the reader through use of terms such as *because*, *consequently*, and *for this reason*. Texts with a problem-and-solution organization prompt careful readers by using signal words and phrases like *one answer is*, *this led to*, *the dilemma is*, and *to solve this*. Signal words and phrases clearly convey the structure of a given text and help readers process information.

However, the prominence of signal words and phrases in elementary texts gives way to more subtle methods of presenting the information, and it becomes less common to see them being used as frequently in middle and high school texts. While middle and high school texts of course continue to follow the rules of organization, their structure may not be as overt, stretching the reader to infer the organizational pattern.

Some texts have a dominant and obvious structure, such as *A Wasp Is Not a Bee* (Singer, 1995), which uses a compare-and-contrast organization to explain similarities and differences between animal pairs. Other texts may

have multiple patterns, but signal words help the reader navigate the complexity. One factor that ensures that texts are comprehensible is the development and explanation of concepts, phenomena, and events in a logical and straightforward manner. When achieved, texts with these attributes embody a concept known as *coherence*—that is, they possess a systematic or logical connection or consistency. As with structure, there is significant evidence that the level of coherence of a given text is an important consideration in determining its level of difficulty (McNamara & Kintsch, 1996).

Informational texts are typically organized using one or more of these expository structures. When this is the case, and readers have experiences with these structures, the reading is more comfortable. When authors do not use as many signal words, or where the coherence is diminished due to the scope of the information, readers have to work a little harder. *Inside the* Titanic (Marschall, 1997) provides readers with information in chronological order, with clear timelines and corresponding information. This is easier to read than *Bury the Dead: Tombs, Corpses, Mummies, Skeletons, and Rituals* (Sloan, 2002) because even though it also has timelines, they stretch over thousands of years, cross many continents, and explore a range of concepts and thematic strands (geography, history, culture, biology). In contrast, *Inside the* Titanic focuses on a shorter period in history and one central idea. While both books fall quantitatively into the Grade 6–8 range, one is harder than the other, based on the organization used.

Just as authors have different ways of establishing a text's organization, so too do they have a number of ways of specifically addressing the issue of text coherence. For example, when main ideas are explicitly stated and in an obvious place at the start of each section, readers are more likely to understand the information. Second, when the information found within a paragraph or section is clearly connected back to the main idea, coherence is improved. Third, when there is a logical order of events and there are obvious relationships between events and topics, comprehension is easier and more likely to occur. Fourth, when readers are provided with clear references and referents and ambiguous pronouns are avoided, texts are easier. And finally, when there are seamless transitions between topics, reading is smooth and feels comfortable.

Text Features

Informational texts using an expository form do not tell a story in the linear fashion associated with narrative. Instead, information is presented as it pertains to separate but related topics or subtopics. In order to guide

readers through and across topics, writers of expository texts employ a variety of text features. Readers' familiarity with some of these features—basic elements, such as a table of contents, major headings, a glossary, and an index—enables them to navigate the presentation of information in an expository text. More sophisticated texts require more from the reader. Sidebars, insets, and bulleted lists are all examples of features that require readers to attend to information located on different parts of the same page, breaking their engagement with the natural flow of text. In these instances, readers must take information from several locations on the same page and infer the relationship between that and the main text. Still other informational text forms expect the reader to use information outside of the main body of text, such as a prologue, a preface, author's notes, and bibliographies.

There are a number of additional text features that authors and editors may use to serve as organizational markers. For example, headings and subheadings can guide readers through information. Similarly, margin notes, graphic organizers, structured overviews, text maps, and the like can provide readers with an alternative way to understand the information being presented. Different text features, such as bold words and charts, serve different purposes.

Graphic Elements

The information presented in many informational texts is made clearer through the effective use of graphic elements. Moline (2012) observes, "There are times when it makes sense *not* to write information in sentences. Visual texts sometimes do the job better" (p. 10). It would take many words and complicated sentences, for example, to describe the design and use of bones throughout the human body. However, books like *Body Basics: Bones* (Ganeri, 2009) provide diagrams, cutaways, illustrations, photographs, and X-rays of various bone systems in the body. Each section has a main text block, labeled graphic elements, and a facts insert. Twist's (2011) *A Little Book of Slime: Everything That Oozes, From Killer Slime to Living Mold* also includes a "slime-ometer" that requires readers to interpret information in a graphic that is analogous to a weather thermometer. *Micromonsters: Creatures That Live on Your Skin, in Your Hair, and in Your Home!* (Jackson, 2010) uses scaled diagrams so the reader can determine the actual size of the creature discussed. Individual graphic elements are often not difficult to read by themselves; the complexity comes into play when readers must make connections between the different kinds of information that are spread out

visually on the page. Readers often need instruction when it comes to interpreting the information presented within graphic/visual elements, such as graphs, diagrams, cutaways, and scale indicators; they also need support in putting these separate pieces of text together. As discussed, both text features and graphic elements contribute to a text's organizational structure. A summary of some common text features and graphic elements and their functions can be found in Figure 4.2.

Figure 4.2 Common Text Features and Graphic Elements and Their Functions

Function	Text Features
Elements that organize	• Chapters • Titles • Headings • Subheadings • List of figures
Elements for locating information	• Table of contents • Indexes • Page numbers
Elements for explanation and elaboration	• Diagrams • Charts and tables • Graphs • Glossary
Elements that illustrate	• Photographs • Illustrations
Elements that notify	• Bolded words • Italics and other changes in font

Source: Fisher, Frey, & Lapp (2008a).

▶ Language Conventionality and Clarity

Informational texts generally do not involve the variations of standard English, vernacular, or dialect that you would find in some literary texts involving different characters and cultures. However, the tenor of the text (i.e., the relationship between reader and author) is strongly influenced by the way language is used, and by how the reader is addressed. A reader's

ability to comprehend an informational text is made more difficult when there are gaps between the text's academic language use and the student's own. It is in this way that the voice and register impart the tenor of the text.
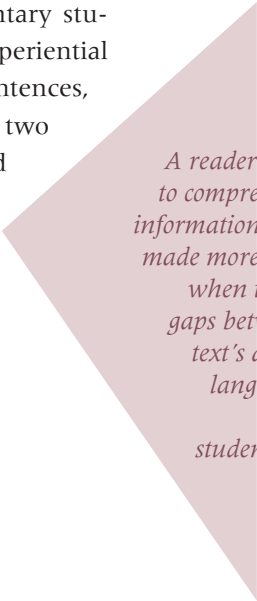
Language Level

The level or degree of sophistication of language in informational text varies based on its intended audience. Texts written for elementary students, for instance, use language that is similar to the students' experiential level. Text progressions allow for the increased use of complex sentences, which often make use of embedded phrases or clauses. Compare two passages, the first from Piaget's seminal work on the language and thinking of children, and the second from a book used in high school psychology courses, discussing the work:

> An adult is at once more highly individualized and far more highly socialized than a child forming part of such a society. He is more individualized, since he can work in private without announcing what he is doing, and without imitating his neighbours. . . . The child is neither individualized, since he cannot keep a single thought secret, and since everything done by one member of the group is repeated through a sort of imitative repercussion by almost every other member, nor is he socialized, since this imitation is not accompanied by what may properly be called an interchange of thought, about half the remarks made by children being ego-centric in character. (Piaget, 1974, p. 61)

The passage below is from the book for high school students:

> Part of the reason for the egocentricity of children is that a significant part of their language involves gestures, movements, and sounds. As these are not words, they cannot express everything, so children must remain partly a prisoner of their own mind. We can understand this when we appreciate that the greater an adult's mastery of language, the more likely they are to be able to understand, or at least be aware of, the views of others. Language, in fact, takes people beyond

A reader's ability to comprehend an informational text is made more difficult when there are gaps between the text's academic language use and the student's own.

themselves, which is why human culture puts such stress on teaching it to children—it enables them to eventually move out of egocentric thinking. (Butler-Bowdon, 2007, p. 224)

Piaget, of course, was not writing for a high school audience; he was writing for other scientists. The second author expanded the ideas expressed in Piaget's work (including that sixty-seven-word sentence) and added further explanation and elaboration. He also reduced the number of technical terms and drew on his sense of the reader's existing knowledge to match the language level to the reader. This example, like many others, draws on other qualitative factors, including register, discussed next.

Register

Informational texts reflect registers from the casual to the formal, sometimes within the same book. A casual register is often used for the title and table of contents in order to engage the reader. Huggins-Cooper's (2008) *Awesome Animals: Beastly Birds and Bats* offers intriguing section titles like "Putrid Pellets," "Dirty Defenses," and "Stinky Birds." These catchy titles are often a gateway to more consultative and formal language in the body texts of the books. When readers turn to the "Stinky Birds" section, they find fairly straightforward information: "The hoopoe makes a foul-smelling nest in a hole in a tree trunk or wall. It adds lots of feces to the nest to keep predators away" (p. 23).

Similarly, Branzei's (2002) *Grossology: The Science of Really Gross Things* is followed by a table of contents with three subdivisions: "Slimy, Mushy, Oozy Gross Things," "Crusty, Scaly Gross Things," and "Stinky, Smelly Gross Things." The text itself uses humor and a casual register, combined with more formal language:

Snot is one part of your daily diet that you never think about. Snot? Yep, you swallow about a quart of it each day. . . . Snot is a slippery liquid called nose mucus (MEW cuss) mixed with a special bacteria-killing chemical. (p. 32)

Then there are those texts that use a formal register throughout. The passage from Piaget is one example. Gray's (2009) book *The Elements:*

A Visual Exploration of Every Known Atom in the Universe is another. It contains beautiful photographs and graphic elements and functions primarily as a reference, rather than as a text likely to be consumed from beginning to end. The register is formal and didactic, as most reference works are. An example from the section on vanadium:

> Tool, steel and high-speed steel are families of iron (26) alloys distinguished by their supreme hardness, toughness, and wear resistance, properties contributed by a few percent of vanadium in the form of vanadium carbide. (p. 63)

Voice

An author's voice conveys a tone—an attitude—toward the subject matter or the reader. An author's voice can be serious and foreboding, or it can be light, humorous, or sarcastic. Even factual information can be presented with a specific voice. Leon's (2001) *Uppity Women of the New World* conveys the author's attitude toward societal views of women in the title, and that attitude continues in the text. What separates this informational text from narrative forms like biography is the extensive use of information to bolster the author's argument. In a passage about Mary Katherine Goddard, who became Baltimore's first postmaster in 1775, Leon reports that

> [a]fter fourteen years running the post office, Mary K. lost her job. Cutbacks? Hardly. Now that it was a cushy federal post with a travel expense account, bureaucrats thought the job "too difficult for a woman." (pp. 29–30)

In another section of book, the author writes:

> From today's perspective, however, the greatest barrier broken by women during these tumultuous times was that of racism: their rebel attitudes ranged from the courage of early "underground railroad" activist Anna Douglass to the splendid insouciance of Elizabeth Mumbet Freeman, a slave who in 1783 stood up in court and demanded to be free, as spelled out in her own state's new constitution. (p. 3)

The writer clearly telegraphs her attitude, using terms like *courage* and *insouciance* in her description of the events, and embeds a quote about the job being too difficult to punctuate her disagreement with this decision. In fact, you can almost hear the writer's sarcastic tone in selecting this quote.

Informational texts can also vary in the degree to which they make use of an authoritative voice, and this then becomes another factor that plays into the tenor of the text. Formal academic text is traditionally written in the third person, and the writer rarely addresses the reader. In contrast, Butler-Bowden's (2007) use of the word *we* in his explanation of Piaget's findings is invitational, and the reader is made to feel as though he or she is a junior colleague. Other writers intentionally adopt a second-person stance to directly address the reader, reaching across the so-called fourth wall that divides reader and author.

Franklin Watts publishes a history series with serious-but-not-too-serious titles that begin with *You Wouldn't Want to . . .* (*Work on the Great Wall of China, Be a Mayan Soothsayer*, etc.). The series takes a familiar tone by addressing the reader in second person. These books have cartoon-like illustrations to convey a tongue-in-cheek tone, which is contrasted with substantive facts and details. One example is *You Wouldn't Want to Be an American Pioneer! A Wilderness You'd Rather Not Tame* (Morley, 2002). The introduction places the reader in the position of being a farmer who is traveling west in the 1840s. All the facts in the books are presented in the familiar second-person voice: "Dig a well to reach underground water. You will pass lots of wells dug by previous pioneers" (p. 18).

For informational texts in particular, there can be an authoritative voice that appears to have credibility based on experiences conveyed or examples provided. In many cases, the use of the second person fulfills a different purpose: to convey expertise. Therefore, the writer may speak directly to the reader, as in "you will notice" or "when you assume too much," which serves to reengage the reader because the perspective left with the reader is that the author is speaking to him or her. This technique is not as common in literary forms, but informational texts can successfully use the second-person point of view to reduce the text difficulty level. If a reader cannot perceive the nuances of attitude and tone presented by the author, however, he or she may not fully comprehend the information. The complexity lies not only in the information itself but also in the reader's ability or inability to interpret the author's voice.

▶ Knowledge Demands

The final factors for qualitatively evaluating informational texts address the extent to which the material corresponds with the knowledge of the intended audience. In other words, audience appropriateness is a measure of how well the text matches the students' probable background and prior knowledge (Fisher & Frey, 2009). These are two important factors for consideration. Some writers consider how much information their reader already knows and can then "elaborate new concepts sufficiently to be meaningful to readers and to facilitate learning" (Armbruster, 1996, p. 54). The research on audience appropriateness is particularly strong (Alexander, Schallert, & Hare, 1991; Seda, Ligouri, & Seda, 1999) and clearly indicates that this should be a major point of consideration when determining the appropriateness of a given text.

Prior Knowledge

Informational texts, particularly discipline-specific ones, can also be made more complex depending on the amount of formal academic knowledge needed to understand the reading. Consider, for instance, the amount of prior knowledge needed to understand Franklin Delano Roosevelt's "Pearl Harbor Address to the Nation" speech on December 8, 1941. After declaring that the previous day would "live in infamy," the president continued:

> The United States was at peace with that nation and, at the solicitation of Japan, was still in conversation with its government and its emperor looking toward the maintenance of peace in the Pacific.
>
> Indeed, one hour after Japanese air squadrons had commenced bombing in the American island of Oahu, the Japanese ambassador to the United States and his colleague delivered to our Secretary of State a formal reply to a recent American message. And while this reply stated that it seemed useless to continue the existing diplomatic negotiations, it contained no threat or hint of war or of armed attack. (History Matters, n.d.)

Roosevelt's speech captures a moment in time, and presumes that his listeners understand his reference to "existing diplomatic negotiations" as well as the inference that the efforts toward "the maintenance of peace

in the Pacific" included an embargo on trade that had continued in the months leading up to the attack. Knowledge demand is further intensified by references to the diplomatic mechanisms of the government and the role of the secretary of state. Add to this the required knowledge about Oahu's geographic location relative to the mainland, and an understanding of the genre of speeches, which primarily persuade and inform, and you can begin to appreciate how this might challenge a high school student. The speech's fairly simple wording belies the complexity of the text itself.

Background Knowledge

We spoke in the previous chapter about the impact of students' lived experiences on their ability to comprehend texts. This can be especially challenging given the abstract nature of much of the content we teach. However, it isn't necessary for a student to walk on a volcano or witness a historical event for him or her to learn about Mount Vesuvius and its destruction of Pompeii. Instead, these experiences are bridged for the student through secondary experiences gained through media. Students today have access to all sorts of videos and online sources, and we all gain some background knowledge from those secondary experiences. While these secondary experiences are never absolute, they do build knowledge. Students in south Texas, for example, have a sense of snow because they see movies about blizzards and watch TV weather reports. That doesn't give them the true sense of cold and slipperiness of ice and snow that a student from a cold climate understands, and they can't have the sensory experience of heavy damp snow or light fluffy snow, but they do gain a working knowledge of the phenomenon.

These secondary experiences from media sources such as films, television shows, and online pictures and videos can provide support to readers as they encounter complex text. Readers may never have visited the Sahara or Mojave Deserts, but secondary experiences can allow them to develop a deeper understanding of the specialized topic of sand dunes in Gallant's (1997) *Sand on the Move: The Story of Dunes*.
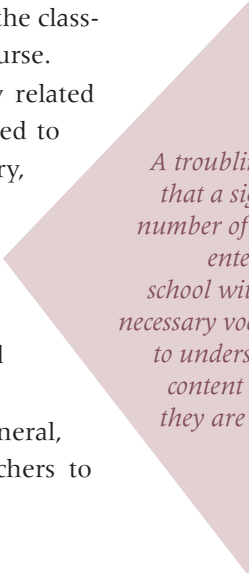
Vocabulary

The ability to understand concepts is directly tied to an understanding of the vocabulary used to represent those concepts (RAND Reading Study Group, 2002). In fact, it is useful to think of vocabulary knowledge as a proxy for content knowledge. The way one explains the structure of an atomic particle is through the accurate use of terms like *neutron*, *electron*, and *proton*. Likewise, we persuade others about opposition to the Vietnam

War through the use of words like *protest*, *nonviolent resistance*, and *Summer of Love*. A troubling fact is that a significant number of students enter middle school without the necessary vocabulary to understand the content material they are reading. One study estimates that as many as 50 percent of sixth graders who are English learners are lacking this vocabulary (Lesaux & Kiefer, 2010). This presents challenges for the materials used in the classroom, reading and writing assignments, and even classroom discourse.

Academic vocabulary and academic language are two closely related factors for understanding the complexity of a text. The terms used to label concepts, processes, and objects are the academic vocabulary, and the words used to make these understandable to others are collectively the academic language. The devices used to link the terms together into a coherent set of ideas constitute the academic language, and include rhetorical devices used to explain and clarify. Without the academic language, the vocabulary would remain a static list of words with limited use.

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Vacca and Vacca (2007) describe three kinds of vocabulary: general, specialized, and technical. This classification system allows teachers to determine which words in a text are worthy of being taught:

- **General Vocabulary.** This category includes words that are widely used, highly frequent, and relatively easy to learn. General words comprise the bulk of students' speaking vocabulary.
- **Specialized Vocabulary.** This category focuses specifically on words that change meaning in different contexts or disciplines. For example, the word *expression* means one thing in general use yet something specific in mathematics. These words deserve specific attention from teachers, as students are likely to be confused by them.
- **Technical Vocabulary.** This category focuses on words that are discipline-specific. They are generally considered difficult words and occur much more rarely than general or specialized words. When evaluating a text, look for how these rare terms are discussed, as they may not require direct instruction if the author of the text is doing a good job of explaining the term, offering examples and nonexamples, and demonstrating how it is applied.

▶ Conclusion

Qualitative evaluation of informational text should always lead back to a consideration of the particular student user and to how he or she will use a given text. First, look for the conceptual density (the number of new concepts per unit of text) to ensure that there is not a significant overload of new information all at once. Second, see if the text introduces new content by making connections with what the reader already knows. Third, choose texts that include more information about fewer topics, rather than those that offer broad but shallow surveys of a topic. This will ensure that students are provided with a more precise focus on the content under investigation than they otherwise would be and, in turn, validate and extend the information students already have about a topic. Fourth, examine the text to see if it specifically addresses the common misconceptions readers have about the topic at hand. These misconceptions are often the source of audience and text mismatch, as students may not be able to integrate new information unless their misunderstandings are specifically addressed.

Learn more about the book this lesson is from: http://bit.ly/2oLqHeD