Reviewing Using the IMET: ELA
Module 102: Questions, Tasks, and Assignments

Essential Questions:

- How does the Instructional Materials Evaluation Tool (IMET) reflect the major features of the Standards and the Shifts?
- What understandings support high-quality, accurate application of the IMET metrics?

Goals:

✔ Understand how aligned materials embody the shifts inherent in the Common Core State Standards
✔ Understand the precise meaning of each metric
✔ Recognize examples and non-examples related to each IMET criteria metric
Reviewing Using the IMET: ELA

Module 102

**NN Metric 2A**: At least 80% of all questions, tasks, and assignments in the materials are text-dependent, requiring students to draw on textual evidence to support both what is explicit as well as valid inferences from the text. The overwhelming majority of these questions and tasks are text-specific.

**NN Metric 2B**: Materials include frequent opportunities for evidence-based discussions and writing to support careful analyses, well-defended claims, and clear information about texts to address the analytical thinking required by the Standards at each grade level.
PRACTICE: Non-Negotiable 2 - Text Dependency

Directions: With your partner, analyze the sample questions for The Great Fire excerpt in your handouts. Use the criteria on the next page in your packet to guide your analysis of text dependency. Compare your responses to the Answer Key on the next page.

QUESTIONS FOR EXCERPT FROM THE GREAT FIRE

1. Read this sentence from paragraph 2 of the passage:

   The city boasted having 59,500 buildings, many of them—such as the Courthouse and the Tribune Building—large and ornately decorated.

   What does the word “boasted” mean?
   A. greatly exaggerated
   B. proudly claimed
   C. roughly estimated
   D. loudly stated

2. In what state is Chicago located?
   A. Texas
   B. California
   C. Illinois
   D. New York

3. The author claims that “Chicago in 1871 was a city ready to burn.” How does he develop this argument with evidence to make it convincing to the reader? Use details and evidence from the text to support your response.

4. The Great Fire explains one of the biggest disasters of the 19th century. Think about a disaster that you’ve heard about in recent times. How was this disaster similar to the one discussed in The Great Fire? Use details and examples from the passage in your response.
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All lesson plans are included as a teaching tool to illustrate the use of the CCSS Instructional Practice Guide during this workshop. They should not be considered model or exemplar lessons.
ANSWER KEY for PRACTICE: Non-Negotiable 2 – Text Dependency

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<thead>
<tr>
<th>Question</th>
<th>Does the question require prior or outside knowledge?</th>
<th>Does answering the question require that students have read the passage?</th>
<th>Does the question require students to use evidence from the passage to determine the correct answer?</th>
<th>Does the question require students to follow the details, make inferences, and/or evaluate what is read?</th>
<th>Does the question require rigorous analysis of complex texts, not just surface understanding?</th>
<th>Does the question align to the expectations of the CCSS overall (vocabulary, structure, syntax, meaning, etc.?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes. The student will either know this word from prior knowledge or they will get this answer wrong. There is not enough context within the text to help them establish meaning.</td>
<td>No. The student will either know the meaning of this word based on prior knowledge or they won’t. Reading the text or not reading it will not help or hurt them.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes.</td>
</tr>
<tr>
<td>2</td>
<td>Yes. This question relies completely on prior knowledge.</td>
<td>No. Reading the text will not help them answer this question.</td>
<td>No. There is no textual evidence the question relies on prior knowledge.</td>
<td>No</td>
<td>No</td>
<td>No.</td>
</tr>
<tr>
<td>3</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes. Students must truly understand the main claim of the text and how it is developed to be able to craft a strong response, and they must use evidence from the text to support their answer</td>
<td>Yes. Standard RI.6.3 calls for analysis of an idea and how it is elaborated, and W.6.1 asks for students to write/defend an argument using evidence.</td>
</tr>
<tr>
<td>4</td>
<td>Yes. Students must have prior knowledge of another disaster to answer this question.</td>
<td>Yes.</td>
<td>Yes.</td>
<td>Partially.</td>
<td>Partially.</td>
<td>No.</td>
</tr>
</tbody>
</table>
Defining Text-Specific Questions

Text-specific questions are a subset of text-dependent questions.

The questions probe the specifics of the text and avoid “canned” questions that could be asked of any text.

These questions can only be applied to one specific text.

<table>
<thead>
<tr>
<th>Text-Dependent</th>
<th>Text-Specific</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the author’s message in the text?</td>
<td>Why does Monk ask this question, “Which ‘We the People’ has ‘troubled the nation’”?</td>
</tr>
<tr>
<td>What is the main idea of the passage?</td>
<td>Why does Monk claim that popular sovereignty is the form of government in America?</td>
</tr>
<tr>
<td>What details can you find that support the main idea?</td>
<td>What evidence is there in paragraph three regarding Marshall’s claim about the “evolving nature of the constitution”?</td>
</tr>
</tbody>
</table>
Example or Non-Example?

WRITE ABOUT READING

Explain that an attitude toward something is an overall feeling about it. For example, if somebody gets excited about playing with puppies, this person has a positive attitude toward animals. Tell students to reflect on what they learned about people’s attitudes toward women in the mid-1800s. Provide students with a Venn diagram to help them organize their ideas.

WRITING TIP Make sure students read the Writing Tip before they begin writing.

WRITER’S ROAD MAP

Problem-Solution Essay

WRITING PROMPT 1

Writing for the Real World Problems exist at school, at home, in your community, and in the world at-large. Sometimes writing about a problem can help you find a solution. Choose a problem that deeply interests you, and write an essay in which you define the problem, examine its causes, and explore possible solutions.

Problems to Explore
- environmental issues, such as acid rain or noise pollution
- issues at school, such as video cameras in the hallways, locker searches, or metal detectors
Writing to Sources

Using Evidence to Answer Text-Dependent Questions: “Order in the Court!” (15 minutes)

- Make sure students have their texts “Order in the Court!” (from Lesson 4). Distribute a large index card to each pair.
- Ask them to record on the index card their pair’s answer to this question:
  1. In the section “What Was Her Crime?,” why was it OK with Susan B. Anthony that she was arrested for voting?
  2. On page 14, the authors wrote, “The spectators were outraged.” Why were the spectators outraged? (Underline the evidence using a red pencil.)
  3. Based on her actions in the courtroom, how would you describe the kind of person Susan B. Anthony was? Make sure to use specific evidence from the text to support your response. (Underline the evidence using a green pencil.)

With prompting, scaffolding, and support, the students will review the series of pictures and text to determine how water was important to early Asian civilizations. After reviewing the documents, students will write to the prompt independently.

Helpful Vocabulary:

- fertile
- irrigation canals
- Indus River
- trade
- cultivate
- sacred
- Yangtze River
- transport
- source
- Hinduism
- Yellow River
- Himalayan Mountains

Writing Task:

Using evidence found in the following documents, your knowledge of our readings, and at least four of the vocabulary words from above, please describe how water was important to early Asian civilizations.
## Activity 6– Analyzing Prompts for Text-Dependency

### Instructions:

Working either individually or in pairs at your table, take the next 10 minutes to analyze the writing prompts below.

Identify which prompts are text dependent and which are not, placing a Y or an N in the column on the right.

<table>
<thead>
<tr>
<th>Number</th>
<th>Prompt</th>
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</tr>
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<tbody>
<tr>
<td>1</td>
<td>You have just read an excerpt from the book <em>Nature by Design</em>, in which a young person visits a farm each summer. If you had a choice of visiting a farm or a city, which would you choose? Write an essay telling what your choice would be and explaining the reasons for it. <em>(Grade 7)</em></td>
<td>N</td>
</tr>
<tr>
<td>2</td>
<td>Based on the information Susan B Anthony presents in her speech titled “Is It a Crime for a Citizen of the United States to Vote?” explain why you agree or disagree with her definition of the role of government in a democracy. <em>(Grade 11)</em></td>
<td>Y</td>
</tr>
<tr>
<td>3</td>
<td>J.T. Holden uses Lewis Carroll’s poem “The Walrus and the Carpenter” as the source material for his poem titled “The Walrus and Carpenter Head Back.” Write an essay that makes and defends a claim about the ways in which Holden has transformed the Carroll poem into something new. Use evidence from both poems in your response. <em>(Grade 9)</em></td>
<td>N</td>
</tr>
<tr>
<td>4</td>
<td>In the excerpt from <em>Counting on Grace</em>, Grace’s attitude toward the letter-writing activity changes as she learns more about it. Write an essay that tells what Grace’s attitude is at the beginning of the excerpt and how it changes as the story continues. Use evidence from the story to support your response. <em>(Grade 6)</em></td>
<td>N</td>
</tr>
<tr>
<td>5</td>
<td>In both passages, the authors provide evidence that Marco Polo’s tales may or may not have been true. Integrating information from both sources, write an essay that either claims that Marco Polo told the truth in his book or claims that Marco Polo made up his stories. Be sure to use information from both passages to support your answer. <em>(Grade 5)</em></td>
<td>Y</td>
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<td>6</td>
<td>Imagine that you are playing at a park and suddenly a dog runs up to you and says, “I’m lost and need help finding my owner.” Write a story about what happens next. <em>(Grade 4)</em></td>
<td>N</td>
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<td>7</td>
<td>In the <em>Great Fire</em>, the author indicates that there were several factors that, when combined, made Chicago an ideal location for a deadly fire. Using evidence from the passage, write an essay that tells the conditions that made the Chicago fire spread so widely and quickly. <em>(Grade 6)</em></td>
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<td>Y/N</td>
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<td>You have just read an article about a famous traveler named Marco Polo. Imagine that you, like Marco Polo, have been given a chance to travel to a new land. Write a story telling what you see on your adventures. Be sure to include details about what you see during your trip and at your destination. (Grade 5)</td>
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<td>Write an essay that analyzes how Hamilton structures his ideas in this excerpt from the Federalist Papers. What are the key ideas he develops and refines as he shapes his argument in favor of unification of the states? Use evidence from the text to develop and support your response. (Grade 11)</td>
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<td>The author of “The Emperor’s New Clothes” includes two minor characters, the minister who serves the emperor and the child watching the final procession. Write an essay that makes and defends a claim about the different ways each of these characters reacts to the emperor’s situation. Include details from the text in your response. (Grade 5)</td>
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## Writing to Sources Activity – Answer Key

### Activity – Analyzing Prompts for Text-Dependency

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We are not taking time to read the associated passages for this activity.

*Participants should come to the conclusion that if they could write the response without looking at the text, then the prompt is not text dependent!*

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Fossil Fish FOUND!

The year was 1938. A strange guest had found its way onboard the Nervine, a fishing boat sailing off the coast of South Africa. It was a huge fish with steel-blue eyes and a pale blue body with silver markings. The fishermen had never caught anything like it.

The fish acted strangely, too. It crawled slowly across the boat's deck on fins that looked like stubby legs. It oozed thick oil from its body, and bit the boat captain's hand. Then, about three hours after its capture, it died.

“Old Fourlegs,” as the fishermen named it, had no value in the food market. But it was very unusual.

The captain called Harriette Coutney Latimer, who sometimes displayed odd fish in her museum in East London, South Africa.

This was not just any old fish. It was a “living fossil” that caused a worldwide stir. Old Fourlegs turned out to be a coelacanth! (See Life Science), a fish that first lived about 400 million years ago. Until 1938, scientists had only seen fossils of this kind of fish. They believed it had been extinct for 70 million years!

Think Through the Text

1. What sentence states the main idea of the second paragraph? The fish acted strangely, too. What details explain or support the main idea? It crawled on leg-like fins, oozed thick oil, and bit the captain's hand.

2. How can you tell that the captain saved the fish's body? The fish lived for three hours after its capture, so the captain hadn't thrown it back in the water. The captain noticed that the fish was unusual and called a museum owner who displayed odd fish. • R.I.5.1, R.I.5.10

English Language Learners

Scaffold

Beginning: Preview the selection with students by looking at the photographs and the graphic features. Discuss what they think the selection might be about.

Intermediate: Read the first four paragraphs of the selection aloud. Have students state the main idea.

High Intermediate: Have students write a sentence describing the main idea of the selection. Ask them to discuss the conclusions they draw from the selection.

Low Intermediate: Read the first four paragraphs of the selection aloud. Have students state the main idea.

Proficient: Ask students to write a short paragraph that includes conclusions and generalizations about the fossil fish.

RI.5.1 quote accurately when explaining what the text says explicitly and when drawing inferences; RI.5.4 read and comprehend informational texts; RI.5.10 read orally with accuracy, appropriate rate, and expression.
Unable to identify it, Ms. Courtenay-Latimer wrote to a scientist named J.B. Smith. Dr. Smith, an expert on fish, was excited. It sounded to him like the lost coelacanth. By the time he managed to reach East London, the fish had been stuffed and its organs thrown away. Still, he could tell it was a coelacanth.

Dr. Smith spent the next fourteen years looking for another one. He put up posters in places all along Africa’s east coast. He offered a cash reward to anyone who found one.

In 1952, Dr. Smith heard that fishermen in the Comoros Islands, near Madagascar, had caught a coelacanth. He rushed to see it and was surprised to learn that the men had caught this kind of fish before, but threw them back in the ocean because they were not good to eat.

Since the discovery of Old Fourlegs, a number of coelacanths have been found, but they are still rare. Many consider this fossil the “most important scientific discovery of the 1900s.”

Fun Fact:
Scientists believe the coelacanth can live up to 100 years.

What do most of the people who saw or heard about coelacanths seem to think? Most of them found it interesting or exciting. **RI.5.1, RI.5.10**

Practice Fluency

**Stress** Read aloud the first two paragraphs on Student Magazine p. 51.

- Remind students that good readers stress important words as they read. Stressing the important words helps bring out the meaning and what is important in the author’s sentences.

- Have students echo read each sentence after you read it. Remind them to stress important words following your example. **RF.5.4b**

**DOMAIN:** Life Science

**LESSON TOPIC:** Encounters with Nature

**Cross-Curricular Connection** Have students reread the last paragraph and the photo caption on Student Magazine p. 50. Explain to students why it is unusual for a species to survive for millions of years without changing its structures or forms. **Most animals that lived millions of years ago became extinct, or died out, as the Earth became warmer or colder. Most animals can survive only in a particular environment. When the environment changes, the animals die or they change so that they can live in the new environment.** Explain that when a species adapts to a new environment, it usually has to change over time.

Connect to the Topic (SB p. 51) • T165
After reading “Fish! Fish! Found!” you knew that a few people were involved in the 1938 discovery of the coelacanth. The main ones were:

A. Dr. Smith
B. Ms. Courtenay-Latimer
C. The captain of the Novara fishing boat

Read each of the six statements below. Which person above does each statement best correspond to? On a separate sheet of paper, match each statement to a person by writing the number and letter that go together.

1. First to see the strange fish
2. Thought the fish might be a coelacanth
3. First to contact Dr. Smith about the fish
4. Offered a reward for more coelacanths
5. Was bitten by the strange fish
6. Had the strange fish stuffed

Review Comprehension

Review the explanation and the characters listed at the top of Student Magazine p. 61. Write the people’s names on the board. Review the directions below the names.

Tell students to copy the letters and names on page 61 onto a separate piece of paper. Have students match the statements to the names by writing the correct numbers next to each letter. Encourage them to recall the answer first, and then verify by looking back into the article. Look at the first statement. Think about the people listed. Could Ms. Courtenay-Latimer have been the first to see the fish? No, she did not learn about the fish until the captain told her. Dr. Smith found out about the fish when she did not know what it was. The first person to see the fish was the captain. Write C next to number 1.

Answers:
1. C
2. A
3. B
4. A
5. C
6. B
GRADE 5: MODULE 4: UNIT 1: LESSON 2
Relationships Between Key Scientific Concepts:
What Causes Earthquakes?

<table>
<thead>
<tr>
<th>Agenda</th>
<th>Teaching Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Opening</td>
<td>• This lesson is the first of two close reads in this unit in which students are reintroduced to standard RI.5.3. Students will explain the relationship between the scientific concepts behind the causes of an earthquake, as well as the effects on the environment and humans that categorize it as a natural disaster.</td>
</tr>
<tr>
<td>A. Checking Independent Reading Homework and Engaging the Reader (8 minutes)</td>
<td>• This unit is not designed for students to develop a full and deep understanding of the science behind earthquakes. Be sure to address these important scientific concepts much more fully during science lessons, including hands-on experiments or simulations as necessary. These literacy lessons “connect” to the science standards but do not fully address those standards.</td>
</tr>
<tr>
<td>B. Review Learning Targets (2 minutes)</td>
<td>• Students read about certain scientific ideas (pressure and energy). They focus specifically on the concept of cause and effect relationships. Students have been introduced to this concept in previous modules (Jackie Robinson and the civil rights movement). This lesson includes a brief review of cause and effect relationships. The instruction aligns with RI.5.3.</td>
</tr>
<tr>
<td>2. Work Time</td>
<td>• In this unit, students will do most work with a partner. This allows for maximum engagement and participation by all members of the class. Consider purposefully partnering students so that stronger readers and writers are with those who struggle with complex text. Change students’ partners periodically so that students can benefit from the thinking of other peers.</td>
</tr>
<tr>
<td>A. First Read: What Is an Earthquake? (15 minutes)</td>
<td>• In this lesson, students use a new note-catcher: Earthquake Concepts. Students are accustomed to reproducing note-catchers into their journal and creating new ones as they continue practicing skills. However, due to the number of columns and wording in this note-catcher, students will be given the note-catcher to fill in. Consider stapling or taping the completed note-catcher into students’ journals to keep all thinking about natural disasters in one place.</td>
</tr>
<tr>
<td>B. Second Read with a Partner: Cause and Effect Relationships about Earthquakes (15 minutes)</td>
<td>• In advance: Write and post the vocabulary words and definitions for this lesson for students to refer to during Work Time, Part C and in preparation for homework.</td>
</tr>
<tr>
<td>C. Vocabulary to Deepen Understanding (13 minutes)</td>
<td>• Prepare necessary technology for the video.</td>
</tr>
<tr>
<td>3. Closing and Assessment</td>
<td>• Review: Give One, Get One protocol (Appendix 1).</td>
</tr>
<tr>
<td>A. Debrief: What Have We Learned about Earthquakes? (5 minutes)</td>
<td></td>
</tr>
<tr>
<td>B. Review Learning Targets (5 minutes)</td>
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<tr>
<td>4. Homework</td>
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<tr>
<td>A. Reread the “Earthquakes” article aloud to someone at home. As you read, think about the causes and effects of an earthquake.</td>
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<tr>
<td>B. Read your independent reading book. Be sure to read for evidence that can be added to the What Do We Know about Natural Disasters? anchor chart. Mark the evidence in your book using the evidence flags.</td>
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<tr>
<td>C. Add vocabulary words to your scientific and academic word glossaries. Don’t forget the academic words from the learning targets (relationship, concepts, context).</td>
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</tbody>
</table>
Relationships Between Key Scientific Concepts:
What Causes Earthquakes?

<table>
<thead>
<tr>
<th>Lesson Vocabulary</th>
<th>Materials</th>
</tr>
</thead>
</table>
| relationship, concepts, cause, effect, chronological, before, during, after, causal chain of events, context; plates, pressures, interior, upward, results, fault, energy, seismic waves, radiate | • What Do We Know about Natural Disasters? anchor chart (from Lesson 1)  
• Students’ independent reading books  
• Journals  
• Earthquakes 101 video clip. **Play only from 0:00 to 1:33.**  
• “Earthquake” article (one per student)  
• Earthquake Concepts note-catcher (one per student and one to display)  
• Earthquakes Concepts Note-Catcher (for teacher reference)  
• Vocabulary Strategies anchor chart (Module 3)  
• Earthquakes anchor chart (from Lesson 1)  
• Evidence flags (five per student) |
**Relationships Between Key Scientific Concepts:**
What Causes Earthquakes?

### Work Time

#### A. First Read: What Is an Earthquake? (15 minutes)
- Distribute the article “Earthquake.” Remind students of the process they have used when reading text for the first time. Ask them to share with a partner the first thing they do when reading a new text. Invite a few students to share their thinking. Listen for: “read for the gist,” “read by ourselves,” “if it is a really hard text, hear it read aloud as we read along,” etc.
- Ask students to read just the first three paragraphs of the article and annotate in the margin by writing the gist—what these paragraphs are about. Starting, “Earth’s crust remains...” and ending, “...Aristotle said that underground winds shook the Earth.”
- After about 2-3 minutes, ask students to share with their partner the gist they wrote. Invite a few partners to share aloud. Listen for: “what causes an earthquake” or “damage that earthquakes cause.”
- Ask the class to listen to you read aloud the rest of the article, and tell them to write the gist in the margin when you pause after each section.
- Then invite a student to share aloud the gist he or she wrote in the margin. Listen for ideas such as:
  - Causes of Earthquakes (paragraphs 4 and 5) —“slow movement of Earth’s crust causes pressure; when large rocks break and slip there is an earthquake”
  - Seismic Waves (paragraphs 6, 7 and 8) —“seismic waves are shocks from the center of the quake that cause shaking”
  - Measuring Earthquakes (paragraphs 9 and 10) —“scientists read seismograms to learn about earthquakes”
  - Size and Strength of an Earthquake (paragraphs 11, 12 and 13) —“scientists measure earthquakes to learn more information about them”
  - How Often Do Earthquakes Occur? (paragraph 14) — “there are a lot of earthquakes every year, but most are small”
  - Predicting Earthquakes (paragraphs 15, 16 and 17) — “scientists are trying to figure out ways to help people prepare for earthquakes”

### Meeting Students’ Needs
- Provide the “Earthquake” text in students’ L1 language when possible.
- Students who struggle reading complex text may need to have the article further chunked into single sentences rather than paragraphs.
- Consider displaying the article on a document camera and modeling writing the gist in the margin after each paragraph is read and students share their thinking about the gist.
- Some students may need the paragraphs read aloud more than one time.
### B. Second Read with a Partner: Cause and Effect Relationships about Earthquakes (15 minutes)

- Ask students to think again about what good readers do when they read closely:
  - “What do readers do after reading for the gist?”
- Call on a few students to share aloud. Listen for: "read again," “read for a specific purpose,” etc.
- Tell students that they will read a portion of the article a second time, this time paying close attention to the relationships between scientific concepts, or ideas, that explain what causes an earthquake and what happens during and after an earthquake. Remind students of the work they did with *cause* and *effect* in Module 3A. Ask students to think about and share with a partner:
  - “What do you know about cause and effect?”
- Invite a few students to share aloud their discussion. Listen for: “Causes and effects are related,” “An effect is a result of whatever caused it,” and “You don’t always know the cause of an effect. Sometimes texts actually describe the effect first, then the cause. Sometimes you have to infer the cause or effect. For example, in our study about Jackie Robinson (Module 3A), we read about causes of the civil rights movement and effects of what some people did during that time.”
- Clarify as needed. Explain that they will be reading to learn what causes an earthquake. Remind them that the text may not describe the causes and effects in the order they actually happen. In real life, cause always comes first, then effect. They happen in *chronological* (first, second, third, etc.) order. But writers don’t always give us the information so clearly.
- Distribute and display the Earthquake Concepts note-catcher. Tell students that in the left-hand column they will write what happens *before* an earthquake, in the middle columns they will write what happens *during* an earthquake, and in the right-hand column they will write what happens *after* an earthquake. Answer any clarifying questions about the note-catcher.
- Ask students to read along in their heads as you reread the fourth paragraph. Set purpose: Ask them to pay attention to what the text says about what happens before an earthquake. Read aloud from “Seismologists, scientists who study...” to the end of the paragraph, “...brittle rocks near the surface.”
- Ask:
  - “What happens before an earthquake?”
- Listen for: “slow moving material (plates) build up and push rocks to the surface.” Model writing "slow moving material (plates) build up and push rocks to the surface” in the first column of the note-catcher and invite students to record this in their own note-catchers.

### Meeting Students’ Needs

- Consider posting all questions asked during the lesson on chart paper or the white board for students to refer to throughout the lesson.
- Students who struggle with writing would benefit from a partially filled-in note-catcher.
- Consider pre-highlighting details to focus on in the text for students who struggle reading complex text in order to help them fill out the note-catcher.
**Work Time (continued)**

- Ask students to take about 7-8 minutes with their partner to continue reading the next three paragraphs of the article and to record in the note-catcher what the text says about what happens during and after an earthquake (starting, “Earth’s plates move only...” and ending, “...people feel a swaying or rolling motion.”) Remind them that they should pause after every two to three sentences to consider and record relationships between concepts about earthquakes in their note-catchers.

- Circulate among partners, redirecting or supporting students when necessary.

- After about 7-8 minutes, refocus students whole group. Call on students to share what they wrote in their note-catchers. (See Earthquake Concepts note-catcher, answers, for teacher reference for ideas students may share.)

- Help students notice that this is in effect a causal chain of events: A starting event causes the next effect and then that effect in turn causes another effect, and so on. Give students a concrete example (like dominoes falling) to help them understand this concept of a causal chain more clearly.

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### Work Time (continued)

#### C. Vocabulary to Deepen Understanding (13 minutes)

- Read aloud the second learning target, “I can use context clues to determine the meaning of new words in an article about earthquakes.” Ask students to think about the word context and what it means in the learning target. Invite a few students to share their thoughts. Listen for: “in the text, what the sentence is about, or “the parts of the text that help to explain its meaning,” etc.

- Draw students’ attention to Vocabulary Strategies anchor chart. Remind students of the work that they have done in previous modules finding the meaning of new words in context. Ask:
  * “Which strategy has been most helpful to you and why?”

- Ask a few students to share with the class.

- Post and focus students on the list of vocabulary for this lesson. Assign each student a partner and two or three words from the list, ensuring that all words are assigned.

- As in previous modules, ask students to do the following:
  1. Work with their partner to find each assigned word in the text.
  2. Underline or circle the words or phrases.
  3. Using strategies listed on the anchor chart, determine the meaning of each word in context.
  4. Write the word, what it means, and a visual in the appropriate Glossary section of their journal.

- Allow partners 4 to 5 minutes to determine the meaning of their words. Circulate to offer support and redirect as needed.

- Refocus students whole group. Tell them that they will now use the Give One, Get One protocol to share some of the words they worked on. Tell them that as they share, they should write the words, what they mean, and visuals in the Glossary section of their journals.

- Begin: Have partners locate another pair and give one of their words and definitions as well as receive one.

- Ask students to return to their seats. Call on students to share aloud their words and what they think they mean in context. Write the meaning next to the words posted for students.

#### Meeting Students’ Needs

- Consider pre-highlighting vocabulary for students who may have difficulty finding it in the text.

- Consider assigning students who struggle with language words whose meanings are more easily found in context.

- Students who struggle with multiple tasks at the same time may not be able to circulate during the Give One, Get One protocol and write a word and its meaning. Consider allowing their partner to write for them or give them extra time later in the day to go back to the vocabulary and write it in their glossaries.
Earth's crust remains in constant motion. Slowly but powerfully, its pieces rub against each other and collide. These collisions produce earthquakes. So does the movement of melted rock pushing up to Earth's surface.

Thousands of earthquakes occur on our planet each year. The largest cause deadly damage. They crumple buildings and bridges. They set off massive landslides. Some also spark devastating waves called tsunamis.

Throughout history, people have known the terror of great earthquakes. In Japan, legend blamed them on the movement of a giant underground catfish. The ancient Chinese thought that they were caused by a huge tortoise. About 2,300 years ago the Greek philosopher Aristotle said that underground winds shook Earth.

**Causes of Earthquakes**

Seismologists, scientists who study the motion of Earth, now know that quakes stem from forces deep inside our planet. There, heated rocky material is flexible. It moves slowly and steadily. Near Earth's surface the rocky material cools. The crust of Earth is formed of plates made of this material. Plate tectonics is the study of how these giant fragments move. These plates are brittle and cannot move easily. The slow movement of material deep in the interior builds up. It pushes on the brittle rocks near the surface.

Earth's plates move only a few inches every year. No one feels this movement except where the plates rub together or stretch apart. The slow movements create large pressures. This causes huge areas of rock to break and slip. During this violent fracture, some rock dives into Earth's interior. Other rock thrusts upward. This results in an earthquake. Often a break in Earth's surface occurs at a fault. A fault is a break where two blocks of rock have moved past each other previously.

**Seismic Waves**

The movement of Earth releases a huge amount of energy. Some of it takes the form of shock waves called seismic waves. These shocks radiate out from the center of the quake. They can cause violent shaking. There are two main types of seismic waves: surface waves and body waves.

Surface waves travel along the surface of the ground. In large earthquakes, they can cause people to feel a swaying or rolling motion.
Body waves move deep underground. They are faster than surface waves. Compression waves are the fastest type of body wave. They are also known as P waves. Shear waves, or S waves, are the slower type of body wave.

Measuring Earthquakes

Scientists use seismometers to measure the distance the ground moves during an earthquake. This tells them how large the seismic waves are. There are thousands of seismometers in use all over the world.

Seismometers create records called seismograms. When an earthquake strikes, scientists read the seismograms to learn about the earthquake. These records show how powerful an earthquake is. By looking at several seismograms, scientists can also figure out the source of the earthquake. This source is called the epicenter. Directly below it is the hypocenter, the place where the rock actually breaks, causing an earthquake.

Size and Strength of an Earthquake

Earthquakes are measured in intensity, magnitude, and seismic moment. Intensity is how strong the shaking of an earthquake is. It is measured on the Modified Mercalli Intensity Scale. The scale uses 12 roman numerals. An intensity of I is the weakest; XII is the strongest. Measurements taken after an earthquake are used to create intensity maps.

The best-known gauge of earthquake magnitude is the Richter scale. It was invented by Charles Richter (1900–85) in 1935. The Richter scale starts at 0. Each whole-number increase represents a tenfold increase in earthquake size. That means that a 3.0 earthquake would be 10 times more powerful than one that measures 2.0. Today, scientists use many other scales in addition to the Richter scale.

Seismic moment measures the physical conditions at the earthquake source. The seismic moment is determined using three factors. The first is the fault slip. This is how far the rock slides along a fault surface after it breaks. The second factor is the area of the fault surface that is actually broken by the earthquake. And the third factor is the measurement of how rigid the rocks are near the broken fault. The seismic moment is found by multiplying these three numbers. It tells scientists an important combination of information about an earthquake's source.
How Often Do Earthquakes Occur?

Earthquakes occur thousands of times each year. But most pass unnoticed. Small earthquakes happen much more often than large ones. For each increase of one magnitude, there are about 10 times fewer earthquakes. Every year, about 10,000 earthquakes of magnitude 4 or greater strike. But there are only about 1,000 earthquakes of magnitude 5 or greater.

Predicting Earthquakes

Accurate and timely earthquake predictions could save thousands of lives each year. Unfortunately, precise predictions remain difficult to impossible. Still, many experts are learning how changes in Earth's crust may provide warnings. These warning signs include underground movements and changes in water levels.

By studying such precursors and other predictors, scientists hope to help communities prepare for quakes. For instance, engineers have learned how to build quake-resistant buildings and bridges. Their designs improve every year with stronger and more flexible designs.

We may never be able to control earthquakes. But we can learn to live with them.

# Earthquake Concepts

<table>
<thead>
<tr>
<th>What happens before an earthquake?</th>
<th>What causes an earthquake?</th>
<th>What happens during an earthquake Chain of Events</th>
<th>What happens after an earthquake?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event/cause</td>
<td>Effect (what happen next)</td>
<td>Effect (what happens next)</td>
<td>Effect (What happen last)</td>
</tr>
<tr>
<td>Event/cause</td>
<td>This, them, causes...</td>
<td>This, then, causes...</td>
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</tbody>
</table>

The slow movement of material (plates) inside the Earth builds up and pushes brittle rocks to the surface.

The slow movement of the plates creates pressure.

Pressure causes rocks to break and slip into the Earth's interior or to thrust upward.

An earthquake results (usually near a fault.)

A lot of energy is released and some of it forms shock waves called seismic waves.

Shocks radiate from the center of the earthquake and cause violent shaking.

People sometimes feel a swaying or rolling motion.
Alignment Criterion 2: Questions, Tasks, and Assignments

Materials support students in building reading comprehension, in finding and producing the textual evidence to support their responses, and in developing grade level academic language.

AC Metric 2A: High-quality sequences of text-dependent questions are prevalent in the materials and build to a deep understanding of the knowledge and central ideas of the text.

AC Metric 2B: Questions and tasks in the materials support students in understanding the academic language (vocabulary and syntax) prevalent in complex text.

AC Metric 2C: Materials focus on argument and informative writing - balance of writing types

AC Metric 2D: Materials support students' developing writing skills over the course of the school year. This includes writing opportunities that are prominent and varied.

AC Metric 2E: Materials integrate speaking and listening into lessons, questions, and tasks and build in frequent opportunities for collaborative discussions.

AC Metric 2F: Materials include explicit instruction of the grammar and conventions standards for the grade level as applied in increasingly sophisticated contexts, with opportunities for application both in and out of context.

AC Metric 2G: Materials address grade-level standards for foundational skills by providing instruction and diagnostic support in phonics, word recognition, and fluency through a research based and transparent progression to develop proficient readers.
Richard Feynman, “The Making of a Scientist” - Grade 6


Learning Objective: The goal of this two to three day exemplar is to give students the opportunity to use the reading and writing habits they’ve been practicing on a regular basis to absorb deep lessons from Richard Feynman’s recollections of interactions with his father. By reading and rereading the passage closely, and focusing their reading through a series of questions and discussion about the text, students will identify how and why Feynman started to look at the world through the eyes of a scientist. When combined with writing about the passage, students will discover how much they can learn from a memoir.

Reading Task: Students will silently read the passage in question on a given day—first independently and then following along with the text as the teacher and/or skillful students read aloud. Depending on the difficulties of a given text and the teacher’s knowledge of the fluency abilities of students, the order of the student silent read and the teacher reading aloud with students following might be reversed. What is important is to allow all students to interact with challenging text on their own as frequently and independently as possible. Students will then reread specific passages in response to a set of concise, text-dependent questions that compel them to examine the meaning and structure of Feynman’s prose. Therefore, rereading is deliberately built into the instructional unit.

Vocabulary Task: Most of the meanings of words in the exemplar text can be discovered by students from careful reading of the context in which they appear. Teachers can use discussions to model and reinforce how to learn vocabulary from contextual clues, and students must be held accountable for engaging in this practice. Where it is judged this is not possible, underlined words are defined briefly for students to the right of the text in a separate column whenever the original text is reproduced. At times, this is all the support these defined words need. At other times, particularly with abstract words, teachers will need to spend more time explaining and discussing them. In addition, in subsequent close readings of passages of the text, high value academic ('Tier Two') words have been bolded to draw attention to them. Given how crucial vocabulary knowledge is for academic and career success, it is essential that these high value words be discussed and lingered over during the instructional sequence.

Sentence Syntax Task: On occasion, students will encounter particularly difficult sentences to decode. Teachers should engage in a close examination of such sentences to help students discover how they are built and how they convey meaning. While many questions addressing important aspects of the text double as questions about syntax, students should receive regular supported practice in deciphering complex sentences. It is crucial that the help they receive in unpacking text complexity focuses both on the precise meaning of what the author is saying and why the author might have constructed the sentence in this particular fashion. That practice will in turn support students’ ability to unpack meaning from syntactically complex sentences they encounter in future reading.

Discussion Task: Students will discuss the exemplar text in depth with their teacher and their classmates, performing activities that result in a close reading of Feynman’s memoir. The goal is to foster student confidence when encountering complex text and to reinforce the skills they have acquired regarding how to build and extend their understanding of a text. A general principle is to always reread the
passage that provides evidence for the question under discussion. This gives students another encounter with the text, helping them develop fluency and reinforcing their use of text evidence.

**Writing Task:** Students will paraphrase different sentences and paragraphs of Feynman’s memoir and then write an informal explanatory essay detailing how one of the interactions between him and his father illustrates a deeper lesson. Teachers might afford students the opportunity to revise their in-class paraphrases after participating in classroom discussion or even rewrite their explanation after receiving teacher feedback, allowing them to refashion both their understanding of the text and their expression of that understanding.

**Text Selection:** This exemplar text, taken from the highly regarded children’s magazine *Cricket*, speaks directly and without condescension to students about why Feynman became a scientist. The clear and compelling examples offer vivid and concrete avenues for exploration and close reading.

**Outline of Lesson Plan:** This lesson can be delivered in two or three days of instruction and reflection on the part of students and their teacher.

**Standards Covered:** The following Common Core State Standards are the focus of this assignment: RI.6.1, RI.6.2, RI.6.4, RI.6.8; W.6.2, W.6.4, W.6.9; SL.6.1; L.6.4, L.6.5, L.6.6.
**Exemplar Text**

Before I was born, my father told my mother, “If it’s a boy, he’s going to be a scientist.” When I was just a little kid, very small in a highchair, my father brought home a lot of little bathroom tiles—seconds—of different colors. We played with them, my father setting them up vertically on my highchair like dominoes, and I would push one end so they would all go down.

Then after a while, I’d help set them up. Pretty soon, we’re setting them up in a more complicated way: two white tiles and a blue tile, two white tiles and a blue tile, and so on. When my mother saw that she said, “Leave the poor child alone. If he wants to put a blue tile, let him put a blue tile.”

But my father said, “No, I want to show him what patterns are like and how interesting they are. It’s a kind of elementary mathematics.” So he started very early to tell me about the world and how interesting it is.

We had the *Encyclopaedia Britannica* at home. When I was a small boy he used to sit me on his lap and read to me from the *Britannica*. We would be reading, say, about dinosaurs. It would be talking about the *Tyrannosaurus rex*, and it would say something like, “This dinosaur is twenty-five feet high and its head is six feet across.”

My father would stop reading and say, “Now, let’s see what that means. That would mean that if he stood in our front yard, he would be tall enough to put his head through our window up here.” (We were on the second floor.) “But his head would be too wide to fit in the window.” Everything he read to me he would translate as best he could into some reality.

It was very exciting and very, very interesting to think there were animals of such magnitude—and that they all died out, and that nobody knew why. I wasn’t frightened that there would be one coming in my window as a consequence of this. But I learned from my father to translate: everything I read I try to figure out what it really means, what it’s really saying.

We used to go to the Catskill Mountains, a place where people from New York City would go in the summer. The fathers would all return to New York to work during the week and come back only for the weekend. On weekends, my father would take me for walks in the woods and he’d tell me about interesting things that were going on in the woods. When the other mothers saw this, they thought it was wonderful and that the other fathers should take their sons for walks. They tried to work on them but they didn’t get anywhere at first. They wanted my father to take all the kids, but he didn’t want to because he had a special relationship with me. So it ended up that the other fathers had to take their children for walks the next weekend.

The next Monday, when the fathers were all back at work, we kids were playing in a
field. One kid says to me, “See that bird? What kind of bird is that?”
I said, “I haven’t the slightest idea what kind of a bird it is.”
He says, “It’s a brown-throated thrush. Your father doesn’t teach you anything!”
But it was the opposite. He had already taught me: “See that bird?” he says. “It’s a
Spencer’s warbler.” (I knew he didn’t know the real name.) “Well, in Italian, it’s a Chutto
Lapittida. In Portuguese it’s a Bom da Peida. In Chinese, it’s a Chung-long-tah, and in
Japanese, it’s a Katano Tekeda. You can know the name of the bird in all the languages of
the world, but when you’re finished, you’ll know absolutely nothing whatever about the
bird. You’ll only know about humans in different places, and what they call the bird. So let’s
look at the bird and see what it’s doing—that’s what counts.” (I learned very early the
difference between knowing the name of something and knowing something.)
He said, “For example, look: the bird pecks at its feathers all the time. See it walking
around, pecking at its feathers?”
“Yeah.”
He says, “Why do you think birds peck at their feathers?”
I said, “Well, maybe they mess up their feathers when they fly, so they’re pecking
them in order to straighten them out.”
“All right,” he says. “If that were the case, then they would peck a lot just after
they’ve been flying. Then, after they’ve been on the ground a while, they wouldn’t peck so
much anymore—you know what I mean?”
“Yeah.”
He says, “Let’s look and see if they peck more just after they land.”
It wasn’t hard to tell: there was not much difference between the birds that had
been walking around a bit and those that had just landed. So I said, “I give up. Why does a
bird peck at its feathers?”
“Because there are lice bothering it,” he says. “The lice eat flakes of protein that
come off its feathers.”
He continued, “Each louse has some waxy stuff on its legs, and little mites eat that.
The mites don’t digest it perfectly, so they emit from their rear ends a sugarlike material, in
which bacteria grow.”
Finally he says, “So you see, everywhere there’s a source of food, there’s some form
of life that finds it.”
Now, I knew that it may not have been exactly a louse, that it might not be exactly
true that the louse’s legs have mites. That story was probably incorrect in detail, but what
he was telling me was right in principle.
Not having experience with many fathers, I didn’t realize how remarkable he was.
How did he learn the deep principles of science and the love of it, what’s behind it, and why
it’s worth doing? I never really asked him, because I just assumed that those were things
that fathers knew.
My father taught me to notice things. One day, I was playing with an “express wagon,” a little wagon with a railing around it. It had a ball in it, and when I pulled the wagon, I noticed something about the way the ball moved. I went to my father and said, “Say, Pop, I noticed something. When I pull the wagon, the ball rolls to the back of the wagon. And when I’m pulling it along and I suddenly stop, the ball rolls to the front of the wagon. Why is that?”

“That, nobody knows,” he said. “The general principle is that things which are moving tend to keep on moving, and things which are standing still tend to stand still, unless you push them hard. This tendency is called ‘inertia,’ but nobody knows why it’s true.” Now, that’s a deep understanding. He didn’t just give me the name.

He went on to say, “If you look from the side, you’ll see that it’s the back of the wagon that you’re pulling against the ball, and the ball stands still. As a matter of fact, from the friction it starts to move forward a little bit in relation to the ground. It doesn’t move back.”

I ran back to the little wagon and set the ball up again and pulled the wagon. Looking sideways, I saw that indeed he was right. Relative to the sidewalk, it moved forward a little bit.

That’s the way I was educated by my father, with those kinds of examples and discussions: no pressure—just lovely, interesting discussions. It has motivated me for the rest of my life, and makes me interested in all the sciences. (It just happens I do physics better.)

I’ve been caught, so to speak—like someone who was given something wonderful when he was a child, and he’s always looking for it again. I’m always looking, like a child, for the wonders I know I’m going to find—maybe not every time, but every once in a while.

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Day One: Instructional Exemplar for Feynman’s “The Making of a Scientist”

**Summary of Activities**
1. Teacher introduces the day’s passage with minimal commentary and students read it independently (5 minutes)
2. Teacher or a skillful reader then reads the passage out loud to the class as students follow along in the text (5 minutes)
3. Teacher asks the class to discuss the first set of text-dependent questions and perform targeted tasks about the passage, with answers in the form of notes, annotations to the text, or more formal responses as appropriate (40 minutes)
4. For homework, teacher asks students to reread the passage and refine their answers to the questions.

<table>
<thead>
<tr>
<th>Text Passage under Discussion</th>
<th>Directions for Teachers/Guiding Questions For Students</th>
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| Before I was born, my father told my mother, “If it’s a boy, he’s going to be a scientist.” When I was just a little kid, very small in a highchair, my father brought home a lot of little bathroom tiles—seconds—of different colors. We played with them, my father setting them up vertically on my highchair like dominoes, and I would push one end so they would all go down...  
[read the intervening paragraphs] | **1. Introduce the passage and students read independently.**  
Other than giving the brief definitions offered to words students would likely not be able to define from context (underlined in the text), avoid giving any background context or instructional guidance at the outset of the lesson while students are reading the text silently. This close reading approach forces students to rely exclusively on the text instead of privileging background knowledge and levels the playing field for all students as they seek to comprehend Feynman’s memoir. It is critical to cultivating independence and creating a culture of close reading that students initially grapple with rich texts like Feynman’s prose without the aid of prefatory material, extensive notes, or even teacher explanations.  

2. Read the passage out loud to the class as students follow along in the text.  
Asking students to listen to “The Making of a Scientist” exposes students a second time to the rhythms and meaning of his language before they begin their own close reading of the passage. Speaking clearly and carefully will allow students to follow Feynman’s narrative, and reading out loud with students following along improves fluency while offering all students access to this complex text. Accurate and skillful modeling of the reading provides students who may be dysfluent with accurate pronunciations and syntactic patterns of English. |
Before I was born, my father told my mother, “If it’s a boy, he’s going to be a scientist.” When I was just a little kid, very small in a highchair, my father brought home a lot of little bathroom tiles—seconds—of different colors. We played with them, my father setting them up vertically on my highchair like dominoes, and I would push one end so they would all go down.

Then after a while, I’d help set them up. Pretty soon, we’re setting them up in a more complicated way: two white tiles and a blue tile, two white tiles and a blue tile, and so on. When my mother saw that she said, “Leave the poor child alone. If he wants to put a blue tile, let him put a blue tile.”

But my father said, “No, I want to show him what patterns are like and how interesting they are. It’s a kind of elementary mathematics.” So he started very early to tell me about the world and how interesting it is.

We had the Encyclopedia Britannica at home. When I was a small boy he used to sit me on his lap and read to me from the Britannica. We would be reading, say, about dinosaurs. It would be talking about the Tyrannosaurus rex, and it would say something like, “This dinosaur is twenty-five feet high and its head is six feet across.”

My father would stop reading and say, “Now, let’s see what that means. That would mean that if he stood in our front yard, he would be tall enough to put his head through our window up here.” (We were on the second floor.) “But his head would be too wide to fit in the window.” Everything he read to me he would translate as best he could into some reality.

It was very exciting and very, very interesting to think there were animals of such magnitude—and that they all died out, and that nobody knew why. I wasn’t frightened that there would be one coming in my window as a consequence of this. But I learned from my father to translate: everything I read I try to figure out what it really means, what it’s really saying.

<table>
<thead>
<tr>
<th>Text Passage under Discussion</th>
<th>Directions for Teachers/Guiding Questions For Students</th>
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</thead>
<tbody>
<tr>
<td>3. Ask the class to answer a small set of text-dependent guided questions and perform targeted tasks about the passage, with answers in the form of notes, annotations to the text, or more formal responses as appropriate.</td>
<td>As students move through these questions and reread Feynman’s memoir, be sure to check for and reinforce their understanding of academic vocabulary in the corresponding text (which will be boldfaced the first time it appears in the text). At times, the questions themselves may focus on academic vocabulary.</td>
</tr>
<tr>
<td>(Q1) What was Feynman’s father trying to teach his son with the tiles? What sentence is the main point of this scene?</td>
<td>Students will likely say that he was teaching his son about patterns or possibly that he was teaching him math. Teachers should ask students to go back into the text to find the main point—something even more important than patterns and math that his father was trying to teach him: “So he started very early to tell me about the world and how interesting it is.”</td>
</tr>
<tr>
<td>Ask students to put the last paragraph of the text passage (“It was very exciting…”) into their own words.</td>
<td>The message Feynman is trying to convey by the dinosaur example aligns quite well with this task: When you read something, you must translate it so you truly understand it. His choice of words like “magnitude” and “consequence” are deliberate and reflect the deep meaning of these words. (“Magnitude” implies both size and importance, for example.) Students should investigate whether their synonyms for these words capture the full sense of what Feynman is implying. If time permits, after students share their answers with one another and the class, students could be offered the opportunity to rewrite their paraphrase.</td>
</tr>
<tr>
<td>Sidebar: Website on Tyrannosaurus rex</td>
<td>If students are intrigued to learn more about Tyrannosaurus rex, teachers can direct them to the informative National Geographic webpage on that dinosaur: <a href="http://animals.nationalgeographic.com/animals/prehistoric/tyrannosaurus-rex/">http://animals.nationalgeographic.com/animals/prehistoric/tyrannosaurus-rex/</a></td>
</tr>
<tr>
<td>Text Passage under Discussion</td>
<td>Directions for Teachers/Guiding Questions For Students</td>
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<td>-------------------------------</td>
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<tr>
<td>We used to go to the Catskill Mountains, a place where people from New York City would go in the summer. The fathers would all return to New York to work during the week and come back only for the weekend. On weekends, my father would take me for walks in the woods and he’d tell me about interesting things that were going on in the woods. When the other mothers saw this, they thought it was wonderful and that the other fathers should take their sons for walks. They tried to work on them but they didn’t get anywhere at first. They wanted my father to take all the kids, but he didn’t want to because he had a special relationship with me. So it ended up that the other fathers had to take their children for walks the next weekend. The next Monday, when the fathers were all back at work, we kids were playing in a field. One kid says to me, “See that bird? What kind of bird is that?” I said, “I haven’t the slightest idea what kind of a bird it is.” He says, “It’s a brown-throated thrush. Your father doesn’t teach you anything!” But it was the opposite. He had already taught me: “See that bird?” he says. “It’s a Spencer’s warbler.” (I knew he didn’t know the real name.) “Well, in Italian, it’s a <em>Chutto Lapittida</em>. In Portuguese it’s a <em>Bom da Peida</em>. In Chinese, it’s a <em>Chung-long-tah</em>, and in Japanese, it’s a <em>Katano Tekeda</em>. You can know the name of the bird in all the languages of the world, but when you’re finished, you’ll know absolutely nothing whatever about the bird. You’ll only know about humans in different places, and what they call the bird. So let’s look at the bird and see what it’s doing—that’s what counts.” (I learned very early the difference between knowing the name of something and knowing something.)</td>
<td>(Q2) In this section of the text, Feynman put the word “doing” (in the final paragraph) in italics to draw attention to it. Why is he focusing on that word, and how does it connect to the lesson his father is trying to teach him in this example? Feynman’s father is trying to draw a distinction between recalling the name of a bird and genuinely knowing something about birds. The example is meant to illustrate that while the same bird is called different things in different languages, knowing the names of the bird (even made up names) doesn’t tell you anything about the bird—only about what humans have called it. For Feynman, what really matters—the difference between knowing the name of something and knowing something—is captured in knowing what a bird does.</td>
</tr>
</tbody>
</table>
Day Two: Instructional Exemplar for Feynman’s “The Making of a Scientist”

Summary of Activities
1. Teacher introduces the day’s passage with minimal commentary and students read it independently (5 minutes)
2. Teacher or a skillful reader then reads the passage out loud to the class as students follow along in the text (5 minutes)
3. Teacher asks the class to discuss text-dependent questions and perform targeted tasks about the passage, with answers in the form of notes, annotations to the text, or more formal responses as appropriate (40 minutes)
4. Teacher assigns homework that asks students to write an explanation of one of Feynman’s examples and the lesson it represents

<table>
<thead>
<tr>
<th>Text under Discussion</th>
<th>Directions for Teachers/Guiding Questions For Students</th>
</tr>
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<tbody>
<tr>
<td>He said, “For example, look: the bird pecks at its feathers all the time. See it walking around, pecking at its feathers?”</td>
<td>(Q3) Why does Feynman’s father tell him about the lice and the mites on birds?</td>
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<tr>
<td>“Yeah.” He says, “Why do you think birds peck at their feathers?”</td>
<td>Students should connect the lesson learned in the previous example—to know something is to know why it does something—to this one. The bird does something, namely pecks at its feathers. To know the bird would be to know why it pecks, and his father explores Feynman’s tentative answer with him before offering up his explanation.</td>
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<tr>
<td>“All right,” he says. “If that were the case, then they would peck a lot just after they’ve been flying. Then, after they’ve been on the ground a while, they wouldn’t peck so much anymore—you know what I mean?”</td>
<td>(Q4) Feynman’s father says, “So you see, everywhere there’s a source of food there’s some form of life that finds it.” Explain what is meant by this sentence and why “some” is in italics.</td>
</tr>
<tr>
<td>“Yeah.” He says, “Let’s look and see if they peck more just after they land.” It wasn’t hard to tell: there was not much difference between the birds that had been walking around a bit and those that had just landed. So I said, “I give up. Why does a bird peck at its feathers?”</td>
<td>This is another good comprehension question to test and see if students truly understand Feynman’s point about knowing. To his earlier insight about truly knowing something, this example adds the further point that knowledge of the principle in question is key. The details—like the names of the birds or the relationship between lice and mites—might be incorrect in the particulars. But to Feynman and his father, what really mattered was the discovery of the principle that some form of life (no matter how small or insignificant) will utilize an available source of food.</td>
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<tr>
<td>“Because there are lice bothering it,” he says. “The lice eat flakes of protein that come off its feathers.” He continued, “Each louse has some waxy stuff on its legs, and little mites eat that. The mites don’t digest it perfectly, so they emit from their rear ends a sugarlike material, in which bacteria grow.”</td>
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<tr>
<td>Finally he says, “So you see, everywhere there’s a source of food, there’s some form of life that finds it.” Now, I knew that it may not have been exactly a louse, that it might not be exactly true that the louse’s legs have mites. That story was probably incorrect in detail, but what he was telling me was right in principle.</td>
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individual parts; general law or larger truth
Not having experience with many fathers, I didn’t realize how remarkable he was. How did he learn the deep principles of science and the love of it, what’s behind it, and why it’s worth doing? I never really asked him, because I just assumed that those were things that fathers knew.

My father taught me to notice things. One day, I was playing with an “express wagon,” a little wagon with a railing around it. It had a ball in it, and when I pulled the wagon, I noticed something about the way the ball moved. I went to my father and said, “Say, Pop, I noticed something. When I pull the wagon, the ball rolls to the back of the wagon. And when I’m pulling it along and I suddenly stop, the ball rolls to the front of the wagon. Why is that?”

“That, nobody knows,” he said. “The general principle is that things which are moving tend to keep on moving, and things which are standing still tend to stand still, unless you push them hard. This tendency is called ‘inertia,’ but nobody knows why it’s true.” Now, that’s a deep understanding. He didn’t just give me the name.

He went on to say, “If you look from the side, you’ll see that it’s the back of the wagon that you’re pulling against the ball, and the ball stands still. As a matter of fact, from the friction it starts to move forward a little bit in relation to the ground. It doesn’t move back.”

I ran back to the little wagon and set the ball up again and pulled the wagon. Looking sideways, I saw that indeed he was right. Relative to the sidewalk, it moved forward a little bit.

That’s the way I was educated by my father, with those kinds of examples and discussions: no pressure—just lovely, interesting discussions. It has motivated me for the rest of my life, and makes me interested in all the sciences. (It just happens I do physics better.)

I’ve been caught, so to speak—like someone who was given something wonderful when he was a child, and he’s always looking for it again. I’m always looking, like a child, for the wonders I know I’m going to find—maybe not every time, but every once in a while.

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<thead>
<tr>
<th>Text under Discussion</th>
<th>Directions for Teachers/Guiding Questions For Students</th>
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<tr>
<td>(Q5) After rereading the section of the text on the wagon and ball example, if materials allow, ask students to engage in this experiment themselves or to guide the teacher in physically re-creating it (or a similar experiment that illustrates the law of inertia).</td>
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<tr>
<td>Feynman’s example shows the principle behind inertia—“that things which are moving tend to keep on moving, and things which are standing still tend to stand still”—a point he stressed in his explanation of what it means to know something. Teachers should note that Feynman’s father is quick to confess to not knowing why there is a law of inertia (“nobody knows”), but does explain the law through an example that he then uses to extract a “general principle.”</td>
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<tr>
<td>Sidebar: Website on Inertia</td>
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<tr>
<td>The following website has several helpful videos on the law of inertia: <a href="http://www.wonderhowto.com/how-to-demonstrate-newtons-law-inertia-223913/">http://www.wonderhowto.com/how-to-demonstrate-newtons-law-inertia-223913/</a></td>
<td></td>
</tr>
<tr>
<td>(Q6) In the final paragraph, Feynman says he “was given something wonderful when he was a child.” Using two of the examples from the text, explain what he was given and how it influenced his life.</td>
<td></td>
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<tr>
<td>Feynman beautifully discusses how his father “educated” him and how it “motivated [him] for the rest of [his] life.” What his father gave him was “lovely, interesting discussions” that “caught” his imagination as a child to such a degree that Feynman is “always looking for” those kinds of discussions.</td>
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<td>Answering this question will require students to draw material from throughout the text and will be very useful to students when they transition to the writing assignment. Students should cite the principle Feynman’s father was trying to convey in each example (“try to figure out what [I read] really means”; “the difference between knowing the name of something and knowing something”).</td>
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</tbody>
</table>
Explanatory Writing Assignment: Directions for Teachers and Students / Guidance for Teachers

For homework, pick one of the examples that Feynman uses in his piece (the dinosaur, the birds, or the wagon) and in 2-3 paragraphs explain both the example and the lesson Feynman’s father was trying to teach him with it.

Teachers should direct students back to their notes, as each of the examples will have been discussed at some length. Like Feynman, many students will organize their analysis by starting with the example and then deriving from it the lesson being taught, but it’s perfectly valid if some students start with the lesson and then cite the example as an instance of the lesson learned.

Teachers may find it helpful to take one of the examples and develop notes on it (or divide the class into groups to do the same) so that students have a clear sense of how to develop the writing assignment with a rich use of the examples. This example could then be put “off limits” to students capable of this work independently but used as scaffolding for students who need more support.

Extension Activity for Day Three: During the next class period, the teacher could have students peer review or revise the explanatory writing pieces completed for homework.

This work was supported by the Bill and Melinda Gates Foundation.
Appendix A: Selected Vocabulary List

The role of vocabulary in this lesson set:
The chart below lists the vocabulary words the teachers who wrote this lesson identified as important to understanding the text for this lesson.

It is important to note the very high number of words recommended for instruction in these passages, more than many of us have been used to teaching. This reflects the importance of vocabulary to comprehending the complex text called for by the CCSS. Students who are behind need to learn even more words. This can only happen if we can teach word meanings efficiently; devoting more time and attention to those words that merit it, and less to those that can be learned with less time and attention. Clearly, there will not be time in the few days of this lesson set to explicitly and extensively teach all the words listed below. Many of the words, however, can be taught quickly, while others deserve explicit and lengthy examination. Teachers should make intentional choices based on professional judgment, the needs of students, and the guidance provided below.

The organization of the charts below:

Each vocabulary word below has been categorized based on the question: “Can students infer the meaning of the word from context?”

The definitions of many words can be inferred in part or in whole from context, and practice with inferring word meanings is an integral part of instruction. The words in the first group have meanings which can be inferred from context within the text. Words in this category are printed in bold below and in the scaffolded version of the student text provided above. Definitions for these words have not been provided here; instead of directly providing definitions for these words draw students’ attention to these word and ask them to try to infer the meaning.

Words in the second group have meanings, or are being used in ways, which cannot reasonably be inferred from context within the text alone. These words are printed in underline, here and in the text, and their definitions are provided in the margins of the text for student reference.

Determining which words to spend more time on

As mentioned above, some words must be taught extremely quickly, sometimes in mere seconds by providing a quick definition and moving on. Other words are both more difficult and more important to understanding this text or future texts and hence deserve time, study, discussion and/or practice. In using this lesson exemplar, teachers will need to determine for themselves which words from the list above deserve more time and which deserve less. Use the guidelines below to help you determine which words to spend more time on. In addition the additional vocabulary resources listed in Appendix B below can help you learn more about selecting and teaching vocabulary.

Quicker and easier to learn — words that are concrete, have only one meaning, or are limited to a specific topic area, such as fires or the ocean etc. These words should be addressed swiftly, when they are encountered and only as needed.

Take more time and attention to master — words that are abstract, represent concepts unlikely to be familiar to many students, have multiple meanings, are a part of a word family, and/or are likely to appear again in future texts. These words require more instructional time.
### Selected Vocabulary List

<table>
<thead>
<tr>
<th>Vocabulary Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>highchair</td>
<td>Encyclopaedia Britannica: large set of books covering all sorts of knowledge</td>
</tr>
<tr>
<td>vertically</td>
<td>detail: individual parts</td>
</tr>
<tr>
<td>seconds</td>
<td>principle: general law or larger truth</td>
</tr>
<tr>
<td>complicated</td>
<td>tend: are likely to</td>
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<tr>
<td>elementary</td>
<td>tendency: way things are</td>
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<tr>
<td>translate</td>
<td>reality</td>
</tr>
<tr>
<td>magnitude</td>
<td>frightened</td>
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<tr>
<td>frightened</td>
<td>consequence</td>
</tr>
<tr>
<td>translation</td>
<td>slightest</td>
</tr>
<tr>
<td>reality</td>
<td>peck</td>
</tr>
<tr>
<td>magnitude</td>
<td>lice</td>
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<tr>
<td>frightened</td>
<td>flakes</td>
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<tr>
<td>consequence</td>
<td>protein</td>
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<tr>
<td>slightest</td>
<td>louse</td>
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<tr>
<td>peck</td>
<td>waxy</td>
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<tr>
<td>lice</td>
<td>mites</td>
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<tr>
<td>flakes</td>
<td>digest</td>
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<tr>
<td>protein</td>
<td>emit</td>
</tr>
<tr>
<td>louse</td>
<td>bacteria</td>
</tr>
<tr>
<td>waxy</td>
<td>emit</td>
</tr>
<tr>
<td>mites</td>
<td>bacteria</td>
</tr>
<tr>
<td>digest</td>
<td>remarked</td>
</tr>
<tr>
<td>emit</td>
<td>assumed</td>
</tr>
<tr>
<td>bacteria</td>
<td>remarked</td>
</tr>
<tr>
<td>remarked</td>
<td>assumed</td>
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</table>

#### Words that cannot be inferred from text

<table>
<thead>
<tr>
<th>Vocabulary Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>suddenly</td>
<td>notice</td>
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<tr>
<td>notice</td>
<td>railing</td>
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<tr>
<td>railing</td>
<td>inertia</td>
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<tr>
<td>inertia</td>
<td>friction</td>
</tr>
<tr>
<td>friction</td>
<td>relation</td>
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<td>relation</td>
<td>relative</td>
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<tr>
<td>relative</td>
<td>motivated</td>
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**Words that can be inferred from text**  
*Ask students to generate a definition*

**Words that cannot be inferred from text**  
*Provide these definitions to students*
Appendix B: Additional Vocabulary Resources

Hungry for more vocabulary? Check out the Academic Word Finder.

The words in the list above were selected by an expert teacher as valuable to teach in the context of this lesson. But these are just some of the many words you could draw from this passage to help your students build their vocabulary. If you are interested in a tool which can quickly help you identify more of the high-value, Tier 2 academic vocabulary words that appear in this passage, visit the free Academic Word Finder at http://achievethecore.org/academic-word-finder/ (registration required).

Please note: Some of the words you will find with this tool will not overlap with those listed above. This is a good thing, because it points out even more words that can help your students! The list above focuses on words crucial to understanding the key points of the passage and includes both Tier 2 and Tier 3 words, whereas the Academic Word Finder focuses on high-frequency Tier 2 words which will be valuable to your students across a variety of texts, (but which may not be particularly central to the meaning of this passage). These words often have multiple meanings or are part of a word family of related words. In addition the Academic Word Finder provides multiple related words and the variety of shades of a word’s meaning all in one location, so teachers can see the depth and diversity of word meanings they can teach around a word. Teachers then decide how and when to expose students to different word senses to promote their vocabulary growth.

Both sources of words are valuable, but for different purposes. Ultimately you will have to rely on your professional judgment to determine which words you choose to focus on with your students.

Eager to learn more about how to select and teach vocabulary? Check out Vocabulary and The Common Core by David Liben.

This paper includes a summary of vocabulary research and practical exercises to help you learn to select and teach vocabulary. Written by classroom veteran and literacy researcher David Liben, the exercises will help you hone your professional judgment and build your skill in the vocabulary teaching crucial to success with the Common Core State Standards.

Download the paper and exercises here: http://achievethecore.org/page/974/vocabulary-and-the-common-core-detail-pg
**AC Metric 2B**: Questions and tasks support students in unpacking the academic language (vocabulary and syntax) prevalent in complex texts.
Questions, Tasks, and Assignments - Example

EngageNY: Grade 4, Module 2B, Unit 1, Lesson 8

**venom** -toxin that is injected with a stinger, fang, or spine

**Question:** How do animals’ bodies help them survive?

**Preparation:** Look back in your Animal Defenses research journal and texts about animal defense mechanisms to find evidence to help you answer the Science Talk question.

<table>
<thead>
<tr>
<th>When I read or see that (evidence) ...</th>
<th>It makes me think that animals’ bodies help them survive by ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Example) most spiders are venomous (Venom page 8)</td>
<td>(Example) I think that the venom paralyzes or kills the spider’s prey and enemies.</td>
</tr>
</tbody>
</table>
**AC Metric 2C:** Alignment Criterion 2C: Materials focus on argument and informative writing in the specified proportions. Alternately, they may reflect blended forms in similar proportions (e.g., exposition and persuasion).

<table>
<thead>
<tr>
<th></th>
<th>3-5</th>
<th>6-8</th>
<th>9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposition</td>
<td>35%</td>
<td>35%</td>
<td>40%</td>
</tr>
<tr>
<td>Opinion</td>
<td>30%</td>
<td>35%</td>
<td>40%</td>
</tr>
<tr>
<td>Narrative</td>
<td>35%</td>
<td>30%</td>
<td>20%</td>
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**Alignment Criterion 2D:** Materials support students’ developing writing skills over the course of the school year. This includes writing opportunities for students that are prominent and varied.

Do students write to build understanding of text as well as for teachers to assess understanding of text?

---

**Write About Literature**

**Advice E-mail** Imagine that you have an online advice column and that Jamie sends you an e-mail asking what he should do in his situation. What advice would you give him? Write the e-mail question from Jamie and then write an e-mail responding to his question. Use examples and details from both texts to support your response.
Alignment Criterion 2D: Example

Grade 9


Jesse responds with anger and frustration. He seems annoyed by his mother and Pete and resents what he sees as their pity.

3. **REREAD** As you reread lines 28–35, compare Jesse’s life before and after the accident. Why do you think he misses the convenience store? Support your answer with explicit textual evidence.

Jesse was a soccer star before the accident and always liked seeing family. Now he feels that his old life is over. He is so distracted that he drives past the store.

5. **READ** As you read lines 41–61, continue to cite textual evidence.

* Underline the text that tells what Jesse thinks about immediately after
Mid-Unit 2 Assessment

Reading and Answering Questions about a New Chapter of The Hope Chest

This assessment centers on standards NYSP12 ELA CCLS RL.4.1, RL.4.2, RL.4.3, L.4.4, and L.4.5. In this assessment, students do an on-demand read of a new chapter in The Hope Chest by Karen Schwabach (the central text for this unit), the historical fiction novel about the women’s suffrage movement and the 19th Amendment vote in Tennessee. Students will answer a series of selected-response questions centering on key academic and domain-specific vocabulary terms, as well as common figures of speech from that era. Students then will answer several text-dependent questions that assess comprehension of the main idea and key details from the text. Students will summarize the chapter using the “Somebody/In/Wanted/But/So/Then” strategy practiced throughout the first half of the unit. Finally, students will write a short essay from a prompt: “How does Violet’s thinking about the suffrage movement change in Chapter 10?” This on-demand essay portion of the mid-unit assessment serves as a formative assessment of W.4.2 and W.4.9a. (Teachers will use this portion of the assessment to give students feedback toward these standards in the second half of the unit to help them prepare for Part II of the end of unit assessment, an essay analyzing how one character’s actions contribute to the theme of the novel.)
Activity: Alignment Criteria 2: Speaking and Listening

<table>
<thead>
<tr>
<th>Accountable Talk: Lauren Resnick, Institute for Learning, Psychology and Cognitive Science Professor University of Pittsburg</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="https://www.youtube.com/watch?v=UVv40or1B-o">https://www.youtube.com/watch?v=UVv40or1B-o</a></td>
<td>How does Accountable Talk provide the conditions for all students to be focusing on text?</td>
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<td></td>
<td>What are the roles of Accountable Talk in improving learning?</td>
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<td></td>
<td>Why does having all students engaging in the work of the lesson address the “equity” issue?</td>
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</table>

Notes:
ACTIVITY: Foundational Skills Scavenger Hunt

Directions: Answer the following questions. Support your responses with details from the CCSS Reading Standards for Foundational Skills.

1. What is the importance or significance of the Standards for Foundational Skills?

2. Answer the following:
   - After which grade are students expected to have mastered Print Concepts and Phonological Awareness skills?
   - By which grade are students expected to have been introduced to all sound spelling patterns?
   - In which grade are students expected to begin reading with enough fluency to support comprehension?
   - In which grades are students expected to read grade level text fluently and with understanding?

3. What major categories of reading instruction are prioritized in the Standards for Foundational Skills? In which categories do the skills from question 2 belong?
# Expeditionary Learning Example

<table>
<thead>
<tr>
<th>Standards</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RF.3 Phonics and Word Recognition</strong></td>
<td>Module 2B, Unit 2, Lesson 9</td>
<td>Module 2B, Unit 1, Lesson 3</td>
<td>Module 2B, Unit 2, Lesson 6</td>
</tr>
<tr>
<td>Know and apply grade-level phonics and word analysis skills in decoding</td>
<td>Module 2B, Unit 2, Lesson 10</td>
<td>Module 2B, Unit 1, Lesson 1</td>
<td>Module 2B, Unit 2, Lesson 7</td>
</tr>
<tr>
<td>words.</td>
<td>Module 2B, Unit 2, Lesson 11</td>
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<tr>
<td><strong>RF.4 Fluency</strong></td>
<td>Module 2B, Unit 2, Lesson 1, Module 3A, Unit 2, Lesson 12</td>
<td>Module 3A, Unit 1, Lesson 4</td>
<td>Module 2B, Unit 2, Lesson 6</td>
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<tr>
<td>Read with sufficient accuracy and fluency to support comprehension.</td>
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<tr>
<td><strong>L.1 Conventions of Standard English</strong></td>
<td>Module 2B, Unit 3, Lesson 9</td>
<td>Module 2B, Unit 2, Lesson 11</td>
<td>Module 4, Unit 3, Lesson 13</td>
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<tr>
<td>Demonstrate command of the conventions of standard English grammar and</td>
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<td>usage when writing or speaking.</td>
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<tr>
<td><strong>L.2 Conventions of Standard English</strong></td>
<td>Module 2B, Unit 1, Lesson 15</td>
<td>Module 2B, Unit 2, Lesson 11</td>
<td>Module 4, Unit 3, Lesson 11</td>
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<tr>
<td>Demonstrate command of the conventions of standard English capitalization,</td>
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<tr>
<td>punctuation, and spelling when writing.</td>
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<tr>
<td><strong>L.3 Knowledge of Language</strong></td>
<td>Module 2B, Unit 1, Lesson 15</td>
<td>Module 2A, Unit 3, Lesson 14</td>
<td>Module 2B, Unit 3, Lesson 6</td>
</tr>
<tr>
<td>Use knowledge of language and its conventions when writing, speaking,</td>
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<tr>
<td>reading, or listening.</td>
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<tr>
<td><strong>L.4 Vocabulary Acquisition and Use</strong></td>
<td>Module 2B, Unit 1, Lesson 3</td>
<td>Module 2A, Unit 1, Lesson 3</td>
<td>Module 2B, Unit 1, Lesson 2</td>
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<tr>
<td>Determine or clarify the meaning of unknown and multiple-meaning words</td>
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<td>and phrases based on grade-level reading and content, choosing flexibly</td>
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<td>from a range of strategies.</td>
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<tr>
<td><strong>L.5 Vocabulary Acquisition and Use</strong></td>
<td>Module 2B, Unit 2, Lesson 9</td>
<td>Module 4, Unit 2, Lesson 4</td>
<td>Module 3B, Unit 1, Lesson 7</td>
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<tr>
<td>Grade 3: Demonstrate understanding of word relationships and nuances in</td>
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<td>word meanings.</td>
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<td>Grades 4 and 5: Demonstrate understanding of figurative language, word</td>
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<tr>
<td>relationships, and nuances in word meanings.</td>
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<tr>
<td><strong>L.6 Vocabulary Acquisition and Use</strong></td>
<td>Module 1, Unit 2, Lesson 7</td>
<td>Module 2B, Unit 3, Lesson 10</td>
<td>Module 2B, Unit 2, Lesson 7</td>
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<tr>
<td>Acquire and use accurately grade-appropriate conversational, general</td>
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<tr>
<td>academic, and domain-specific words and phrases.</td>
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