



EXPEDITIONARY  
LEARNING

## **Grade 5: Module 2B: Unit 1: Lesson 2**

### **Paraphrasing Quotes and Analyzing Visual Elements: *Investigating the Scientific Method with Max Axiom Super Scientist***



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**Long-Term Targets Addressed (Based on NYSP12 ELA CCLS)**

I can quote accurately from a text when explaining what the text says explicitly and when drawing inferences. (RL.5.1)

I can paraphrase information in notes and finished work. (W.5.8)

I can analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text. (RL.5.7)

I can determine the meaning of unknown and multiple-meaning words and phrases based on fifth-grade reading and content, choosing flexibly from a range of strategies. (L.5.4)

- a. I can use context as a clue to the meaning of a word or phrase.
- b. I can use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word.

**Supporting Learning Targets**

- I can explain the first steps Max Axiom takes to solve a problem by paraphrasing quotes from *Max Axiom*.
- I can analyze how visual elements in *Max Axiom* contribute to my understanding of the steps Max Axiom takes to solve a problem.
- I can determine the meaning of unknown words and phrases using a variety of strategies.

**Ongoing Assessment**

- Gist statement (in journal)
- *Max Axiom*: Details and Visual Elements graphic organizer, page 1
- Vocabulary defined (in journal)
- Independent Reading Choice Board response



Agenda	Teaching Notes
<ol style="list-style-type: none"> <li>1. Opening               <ol style="list-style-type: none"> <li>A. Reviewing Homework and Engaging the Reader (5 minutes)</li> </ol> </li> <li>2. Work Time               <ol style="list-style-type: none"> <li>A. Determining the Gist: <i>Max Axiom</i> Section 1: “A World of Questions” (10 minutes)</li> <li>B. Second Read: Explaining Steps Max Axiom Takes to Solve a Problem and Analyzing Visual Elements (20 minutes)</li> <li>C. Vocabulary to Deepen Understanding (20 minutes)</li> </ol> </li> <li>3. Closing and Assessment               <ol style="list-style-type: none"> <li>A. Debrief and Reviewing Learning Targets (5 minutes)</li> </ol> </li> <li>4. Homework               <ol style="list-style-type: none"> <li>A. Complete the task card</li> <li>B. Finish class work.</li> <li>C. Independent reading.</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• This lesson is the first of four lessons that follow a similar format. Students identify details and paraphrase information from the text to explain how a scientist uses a process of inquiry to solve a problem. Throughout this graphic novel study, emphasize to students that while Max Axiom engages in a relatively linear process for solving a problem, termed “the scientific method,” real-world scientists tend to use a more iterative, less sequential process to arrive at their solutions. The concept of scientific inquiry can and should be reinforced during science instruction.</li> <li>• In this unit, paraphrasing is an introduction to one element of Standard W.5.8, which is not formally assessed in Unit 1. Students’ work with paraphrasing serves as a scaffold toward the quoting, paraphrasing, and summarizing work they will do in Units 2 and 3.</li> <li>• In the first half of this unit, students analyze how visual elements contribute to the meaning of a text, which lays the foundation for their final performance task: writing their own graphic novelette about an invention that was developed to meet people’s needs (see Performance Task description for details).</li> <li>• Students also build on the vocabulary strategies they learned in Module 1 to determine the meaning of key terms from the text using context clues, morphology (affixes and root words), and reference materials. Students begin a glossary in the back of their journals that they will continue to build on throughout this module. By starting the glossary from the last page, students can continue to build their glossary from back to front without running out of space.</li> <li>• In advance:             <ul style="list-style-type: none"> <li>– Review the Stretch-o-Meter protocol (Work Time A). Briefly describe this protocol to any students who might be physically restricted. Preview the three options from the “Meeting Students’ Needs” column and ask them to consider which option they would prefer.</li> <li>– Decide if you will use the Close Readers Do These Things anchor chart from Module 1, or if you will create a new anchor chart with the same title to begin this module (see Work Time A).</li> <li>– Create Quote/Paraphrase” anchor chart and “Vocabulary Strategies anchor chart.</li> <li>– Review the context clues and affixes/root words discussion in Work Time C; prepare to listen for and support students’ use of these strategies in determining the meaning of unfamiliar words.</li> <li>– Consider displaying key vocabulary from the text to save time during Work Time C.</li> <li>– Review the Learning Lineup protocol described in the Closing.</li> </ul> </li> </ul>



Lesson Vocabulary	Materials
<p>explain, steps, paraphrased quotes, analyze, visual elements, contribute, determine, variety, strategies, gutters, construct, defense, (4), scientific method (5), affect (6), effects, fields (7), overwhelming (8), repeating (9)</p>	<ul style="list-style-type: none"><li>• <i>Investigating the Scientific Method with Max Axiom</i> (book; one per student)</li><li>• Journals (students' own, begun in Lesson 1)</li><li>• Document camera</li><li>• Group Norms anchor chart (from Lesson 1)</li><li>• Close Readers Do These Things anchor chart (from Module 1, Unit 1, Lesson 1; or create a new one based on guidance in Work Time A)</li><li>• <i>Max Axiom: Details and Visual Elements</i> graphic organizer, page 1 (one per student)</li><li>• Quote/Paraphrase anchor chart (new; teacher-created)</li><li>• Visual Elements of a Graphic Novel reference page (from Lesson 1, taped into journals)</li><li>• <i>Max Axiom: Details and Visual Elements</i> graphic organizer, page 1 (answers, for teacher reference)</li><li>• Vocabulary Strategies anchor chart (new; co-created with students during Work Time C)</li><li>• Index cards (one per student)</li></ul>



Opening	Meeting Students' Needs
<p><b>A. Reviewing Homework and Engaging the Reader (5 minutes)</b></p> <ul style="list-style-type: none"> <li>• As an entry task for today's lesson, ask students to take out the Independent Reading Choice Board response from Lesson 1 homework. Review these responses to determine students' ability to use close reading strategies as they read independently. Say something like: "Let's review the guiding questions revealed in the last lesson. Guiding questions help guide our inquiry throughout a module and help us discover the big ideas. Remember, the goal of learning isn't only to memorize facts, but also to develop a deep understanding of critical concepts. Big ideas are the understandings that will stick with you long after you have taken your assessments and finished fifth grade."</li> <li>• Refer students to the guiding questions as you or volunteers read them aloud:             <ul style="list-style-type: none"> <li>* "How do new or improved technologies meet societal needs?"</li> <li>* "How do authors structure text and use visual elements to engage and support readers' understanding of complex ideas?"</li> </ul> </li> <li>• Ask students to think about and briefly discuss with a nearby partner what they notice about the guiding questions. After 1 minute, invite students to share their thinking whole class. Listen for:             <ul style="list-style-type: none"> <li>– "I notice we will be learning about visual elements, text structure, inventors, improved technologies, and complex ideas."</li> <li>– "I notice we will be thinking about how new technologies are developed to meet people's needs," or similar ideas.</li> </ul> </li> <li>• Acknowledge the things students notice and then help them see how the work they do today will relate. Say something like: "The performance task for this module will be to write your own graphic novel about how an invention was developed to meet the needs of society. Today our focus is on the second guiding question as we study the visual elements the author uses in <i>Max Axiom</i> to support our understanding of the first steps Max takes to solve a problem. Paying attention to visual elements now will help build a greater conceptual understanding of the techniques graphic novelists use to convey important ideas, so you will have a foundation of expertise to draw from when it's time to write your own."</li> </ul>	<ul style="list-style-type: none"> <li>• To support visual learners, consider displaying the guiding questions on a chart to revisit during the module.</li> </ul>



Work Time	Meeting Students' Needs
<p><b>A. Determining the Gist: <i>Max Axiom</i> Section 1: “A World of Questions” (10 minutes)</b></p> <ul style="list-style-type: none"><li>• Ask students to locate their <i>Investigating the Scientific Method with Max Axiom</i> book and their <b>journals</b> then sit with their small group members from Lesson 1.</li><li>• Display and briefly review the <b>Group Norms anchor chart</b> with students. Remind students to refer to these norms as they work with group members to master today’s learning targets.</li><li>• Display the <b>Close Readers Do These Things anchor chart</b> and ask students to remember the close reading they did in Module 1 around the Universal Declaration of Human Rights and <i>Esperanza Rising</i>. Tell them to discuss with their groups then share out whole class important things that close readers do.</li><li>• After 1 minute, cold call a few students to share out. Listen for:<ul style="list-style-type: none"><li>– Read the text slowly at least twice.</li><li>– Get the gist of what a text is about.</li><li>– Circle words you aren’t sure of and try to figure them out.</li><li>– Reread, annotate, and underline key vocabulary.</li><li>– Use the text to answer questions.</li><li>– Gather evidence (quotes) from the text.</li><li>– Talk with each other about what you think it means.</li><li>– Read again to summarize or answer specific questions.</li></ul></li><li>• Explain that today’s first read is for gist. Pose the question:<ul style="list-style-type: none"><li>* “What do you remember from Module 1 about determining the gist?”</li></ul></li><li>• Listen for students to suggest that a gist is a really broad statement about what the text or section of text is generally about and there can be more than one correct answer.</li></ul>	



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"> <li>• Ask students to open their books to page 4 and silently read Section 1. Remind them to consider the gist as they read.</li> <li>• After giving students 4-5 minutes to read independently, ask them to turn to their group members and discuss:               <ul style="list-style-type: none"> <li>* “What is the gist of Section 1: “A World of Questions?””</li> </ul> </li> <li>• Give students 1 minute to discuss the gist in groups. Then, cold call a student from each group to share out. Listen for something like:               <ul style="list-style-type: none"> <li>* “A scientist named Max has a problem to solve for the mayor and he’s going to show us how he solves it using a process called the scientific method.”</li> </ul> </li> <li>• Ask students to record the gist of <i>Max Axiom</i> Section 1: “A World of Questions” on a blank page of their journal.</li> <li>• Refer students to the prediction they recorded in their journal during Lesson 1. Ask students to consider:               <ul style="list-style-type: none"> <li>* “Does your prediction match your gist?”</li> </ul> </li> <li>• Then, tell students they are about to participate in a Stretch-0-Meter protocol to indicate how closely their prediction and gist statement match.               <ul style="list-style-type: none"> <li>– Model the protocol for students by stretching as tall as you can get, fingers almost touching the sky, and explain this would mean an almost exact match of prediction and gist.</li> <li>– Model sitting on the floor, and explain this would mean their prediction was really far off from the actual gist.</li> <li>– Model a few variations between sitting and completely stretched to show how students could indicate how close they believe their prediction to be to the actual gist.</li> </ul> </li> <li>• Invite students to indicate with a stretch how much their gist matched their prediction from the previous lesson.</li> <li>• Ask students who were stretched tall to share any strategies they had for predicting. Honor all strategies that lead to logical predictions and listen for students to note the title of the section as a means of predicting. Remind students of the titles of chapters in <i>Esperanza Rising</i>. Often, the titles in <i>Esperanza Rising</i> provided clues as to what the chapter might be about. Encourage students to attend to the titles of sections in <i>Max Axiom</i> to help them predict what they will read about.</li> </ul>	<ul style="list-style-type: none"> <li>• As you read pages 4 and 5 aloud, display them under a document camera and point to each part to support visual learners and students who are hearing impaired.</li> <li>• For students who struggle to determine the gist of longer passages, encourage them to find the gist of facing pages and to keep track of this as they continue reading. This will make it more manageable to determine the gist of the entire section.</li> <li>• Students confined to a wheelchair or otherwise physically restricted from participating in this protocol can stretch just their arms, use just their pointer finger, or you or an aide can be a proxy. Make sure to represent the students’ beliefs about the closeness of the gist to their prediction, not your own assessment.</li> </ul>



Work Time (continued)	Meeting Students' Needs
<p><b>B. Second Read: Explaining Steps Max Axiom Takes to Solve a Problem and Analyzing Visual Elements (20 minutes)</b></p> <ul style="list-style-type: none"> <li>• Say: “Let’s review the first two learning targets to help focus our attention as we read even more closely.” Read the first target aloud or invite a volunteer to do so:           <ul style="list-style-type: none"> <li>* “I can explain the first steps Max Axiom takes to solve a problem using paraphrased quotes from <i>Max Axiom</i>.”</li> </ul> </li> <li>• Invite students to share the meaning of the word <i>explain</i>. Listen for responses such as:           <ul style="list-style-type: none"> <li>– “Explain means to describe with details or to teach others.”</li> </ul> </li> <li>• Direct students’ attention to the word <i>steps</i> and ask them to determine the meaning of that word based on how it’s used in the context of this target. Invite a volunteer to share out. Listen for students to make the distinction that this word is not the same as “steps leading up to another floor in a house or building.” Rather, in this particular context, the word “steps” means “stages or phases in a process, like steps to follow to complete a recipe.”</li> <li>• Circle <i>paraphrased quotes</i>. Invite students to share ideas about what it means to paraphrase quotes from the text. Listen for them to suggest that paraphrasing means restating what the text says in your own words. If students are not familiar with what it means to paraphrase quotes, define for them.</li> <li>• Read the second target aloud, or invite a volunteer to do so:           <ul style="list-style-type: none"> <li>* “I can analyze how visual elements in <i>Max Axiom</i> contribute to my understanding of the steps Max Axiom takes to solve a problem.”</li> </ul> </li> <li>• Ask students to consider the meaning of the words <i>analyze</i>, <i>visual elements</i>, and <i>contribute</i>. Invite volunteers to share their thinking. Listen for:           <ul style="list-style-type: none"> <li>– “Analyze means to study carefully.”</li> <li>– “Visual elements are things the author does with text or pictures to draw our attention to specific information.”</li> <li>– “Contribute means to add to or support.”</li> </ul> </li> <li>• Help students synthesize their understanding of this new vocabulary by inviting volunteers to read each learning target aloud, replacing key words with synonyms generated from the discussion.</li> <li>• Distribute the <b>Max Axiom: Details and Visual Elements graphic organizer, page 1</b>. Orient students to the format of the graphic organizer by pointing out the two largest boxes: “Asking a Question” and “Gathering Information.” Tell students they will paraphrase quotes from the text to explain how to ask scientific questions and gather information on the two bulleted lines provided in each box.</li> </ul>	<ul style="list-style-type: none"> <li>• To support visual learners and ELL students, display a drawing, picture from the Internet, or familiar synonym above or below key words in learning targets.</li> </ul>



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"><li>• Say something like: “Let’s clarify what it means to paraphrase quotes by practicing.” Display the <b>Quote/Paraphrase anchor chart</b>. Ask students to discuss the difference between a quote and a paraphrased detail. Listen for:<ul style="list-style-type: none"><li>– “Quotes are exactly what’s said in the text, so you need to place quotation marks around the phrase or sentence when you add it to your notes to show they are someone else’s words.”</li><li>– “When you paraphrase, you put the idea into your own words; if it’s in my own words, I don’t need to use quotation marks around the sentence or phrase,” or similar ideas.</li></ul></li><li>• Ask students to think about when it would be important to quote directly from the text and when it would be better to paraphrase. Listen for: “You would paraphrase when you just need to express an idea that is similar to what you read,” or “If you want to prove something, or support your ideas with exact information from a text you would quote exactly.”</li><li>• Reveal the first two quotes from <i>Max Axiom</i>. Ask students to talk in their groups about how to paraphrase these two quotes.</li><li>• After about 2 minutes, invite a member from each group to share out whole class. Record strong student examples of paraphrased versions of the two quotes. Ask students to discuss with group members:<ul style="list-style-type: none"><li>* “How do you know you have paraphrased a quote well?”</li></ul></li><li>• Listen for: “Good paraphrasing restates the quote in a way that sounds natural and expresses the same idea.”</li><li>• Refocus students’ attention on their <i>Max Axiom: Detail and Visual Elements</i> graphic organizer. Remind them to use paraphrasing skills as they complete the “details” section of each box. Focus students’ attention on the second half of each box highlighting the visual elements. Tell students they will analyze the ways these visual elements support their understanding of the first two steps of the scientific method and record their thinking. Remind students to refer to the <b>Visual Elements of a Graphic Novel reference page</b> they taped into their journals in Lesson 1 to find the descriptions of “information box” and “gutters.”</li><li>• Point out the two boxes on the graphic organizer for recording “Key Terms (academic)” and “Key Terms (scientific).” Tell students they will examine key words more closely and fill in those boxes during Work Time C.</li><li>• Ask students to work with their groups for 10 minutes to read Section 1 of <i>Max Axiom</i> a second time and complete the assigned portion of the <i>Max Axiom: Details and Visual Elements</i> graphic organizer. Circulate to provide support.</li><li>• Refocus whole group. Ask students to share out the paraphrased quotes from the text that explain how to ask scientific questions and gather information. See <b><i>Max Axiom: Details and Visual Elements</i> graphic organizer, page 1, (answers, for teacher reference)</b>.</li></ul>	<ul style="list-style-type: none"><li>• To support visual learners, consider allowing students from each group to display the example of the visual element (information box or gutters) under the document camera.</li></ul>



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"><li>• Refer students to the descriptions of “information box” and “gutters” on the Visual Elements of a Graphic Novel reference page.</li><li>• Cold call students from different groups to share new examples of each visual element they located. Examples of information boxes could include:<ul style="list-style-type: none"><li>– “Definition: levee” (page 5)</li><li>– “Steps of the Scientific Method” (page 5)</li><li>– “Yes-or-No vs. Open-Ended Question” (page 7)</li><li>– “The Internet: NET acronym” (page 9)</li></ul></li><li>• Examples of gutters could include:<ul style="list-style-type: none"><li>– Between each of the six frames on page 3.</li><li>– Between the top frame and the rest of the page on page 6.</li><li>– Between each of the three frames on page 7.</li></ul></li><li>• Invite a student from each group to share their responses to the following questions from the graphic organizer:<ul style="list-style-type: none"><li>* “How does an information box support your understanding of the first step of the scientific method?”</li><li>* “How do gutters support your understanding of the second step of the scientific method?” See <i>Max Axiom: Details and Visual Elements Graphic Organizer</i>, page 1 (answers, for teacher reference).</li></ul></li><li>• Ask students to take 2 minutes to reflect in their groups, supporting their answers with details and visual elements:<ul style="list-style-type: none"><li>* “After reading this section of <i>Max Axiom</i>, what do you think might help a scientist generate a scientific question?”</li></ul></li><li>• Invite a few students to share their thinking whole group. Listen for comments such as:<ul style="list-style-type: none"><li>– “It might help if they try to create a thoughtful question that doesn’t have a yes-or-no answer, because on page 7 Max says that yes-or-no questions ‘don’t require much research’ and the information box says open-ended questions are better.”</li><li>– “A scientific question needs to be one that you can answer with research and experiments because in the text Max goes to the library to research his question.”</li></ul></li><li>• Ask students to record their response to the reflection question on the next blank page in their journals.</li></ul>	<ul style="list-style-type: none"><li>• For students who struggle with the physical act of writing, allow them to type their responses on a computer or word processor, or dictate their analysis paragraph to an aide or a peer acting as a scribe.</li></ul>



Work Time (continued)	Meeting Students' Needs
<p><b>C. Vocabulary to Deepen Understanding (20 minutes)</b></p> <ul style="list-style-type: none"> <li>• Introduce the third learning target:               <ul style="list-style-type: none"> <li>– “I can determine the meaning of unknown words and phrases using a variety of strategies.”</li> </ul> </li> <li>• Focus students on the words <i>determine</i>, <i>variety</i>, and <i>strategies</i> and ask them to offer a synonym or definition based on how they are used in this target. Listen for: “Determine means to find out,” “Variety means a mixture of different items,” and “Strategies are plans or techniques used to accomplish a goal,” or similar responses.</li> <li>• Ask students to be metacognitive about the strategies they use to determine the meaning of those words from the target. Listen for:               <ul style="list-style-type: none"> <li>– “When thinking about the word ‘determine,’ I tried the phrase ‘find out’ and that still made sense in the sentence.”</li> <li>– “When I read the word ‘variety,’ I looked at the words before and after and realized that it means something like different.”</li> </ul> </li> <li>• Display the <b>Vocabulary Strategies anchor chart</b>, then invite students to draw on what they remember from Module 1 about vocabulary strategies they used to determine the meaning of new words. Invite several students to share their thinking aloud. Listen for things such as:               <ul style="list-style-type: none"> <li>– “Read words and phrases before and after the word for hints.”</li> <li>– “Think about parts of the word that I already know (prefix, suffix, root).”</li> <li>– “Think about what kind of word it is (noun, verb, adjective, etc.).”</li> <li>– “Substitute another word that would make sense,” and similar responses.</li> </ul> </li> <li>• Add student responses to the Vocabulary Strategies anchor chart and keep this chart displayed for student reference throughout the module. Remind students that the purpose of defining new and key words in text is to help deepen understanding of the text.</li> <li>• Remind students that informational texts often have a glossary, or a place that lists words and definitions. Explain to students that they will be creating their own glossaries to keep track of words that will help them become better readers.</li> <li>• Explain that they will build this glossary backwards in their journals in order to maximize pages for other things in the front of their journal. Ask students to turn to the very last page in their journals. Tell them this is where they will begin a glossary of new words that they will add to throughout the module.</li> </ul>	<ul style="list-style-type: none"> <li>• To support visual learners and ELL students, display a drawing, image from the internet, or a familiar synonym above or below key words in the learning target.</li> <li>• Consider using a think-aloud strategy, either whole class or with a small group, to model using vocabulary strategies for the first several terms.</li> <li>• Consider modeling, either whole class or with a small group, how to complete the four-column chart with the first two terms.</li> <li>• For student reference, display a working definition of “academic vocabulary,” or “words found in a variety of genres and subjects unrelated to science”; and “scientific vocabulary,” or “words unique to science concepts.”</li> </ul>



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"><li>• Tell students they are encouraged to use these words in their own speaking and writing, and that this glossary can serve as a reference material when they need to check the spelling or meaning of a word.</li><li>• Model as you instruct students to set up a four-column chart on their first glossary page:<ul style="list-style-type: none"><li>– Column 1: Word</li><li>– Column 2: Synonym</li><li>– Column 3: Definition</li><li>– Column 4: Picture</li></ul></li><li>• Say something like: “Let’s explore the first vocabulary term, <i>construct</i>, together.”</li><li>• Display the following terms:<ul style="list-style-type: none"><li>– construct</li><li>– construction</li><li>– structure</li><li>– destruction</li><li>– infrastructure</li><li>– obstruct</li></ul></li><li>• Ask students what they notice about these terms. Listen for:<ul style="list-style-type: none"><li>– “The words sound kind of similar.”</li><li>– “They all have ‘-struct’ in them.”</li><li>– “All of the words have the same root,” or similar suggestions.</li></ul></li><li>• Confirm or explain that these terms share the same Latin root, “stru-” or “struct-” meaning “build.”</li></ul>	



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"> <li>• Say something like: “The root of a word is its base. If you know the meaning of the root, it is much easier to determine the meaning of the whole term. Root words often have affixes, or letters attached to the beginning or ending of a root word to change or add to the meaning. A prefix is attached at the beginning of a word; a suffix is attached at the end. Now I want you to look closely at our first term, ‘construct.’ This word is made up of two parts: the root, ‘-struct’ and a prefix, ‘con-.’” As you are discussing the term, draw students’ attention to the root and the prefix by underlining one and circling the other. Explain that the prefix “con-” means “with” or “together” and invite a few students to use this knowledge to determine the meaning of “construct.” Listen for:             <ul style="list-style-type: none"> <li>– “Construct means to build together or put together,” or a similar suggestion.</li> </ul> </li> <li>• Direct students to work in their groups to locate the word “construct” on page 4 of <i>Max Axiom</i> and use context clues to determine if their definition makes sense.</li> <li>• After 1 or 2 minutes, invite several students to share their thinking whole class. Listen for:             <ul style="list-style-type: none"> <li>– “I notice in panel 2 it says the problem is that the river is going to flood and it seems like constructing a levee will keep the water out. I think it makes sense that they would build something to keep the water out.”</li> <li>– “I noticed that it says they are going to ‘construct an earthen levee’ and in panel 5 it says, ‘the levee needs to be built.’ That made me think that our definition for construct as ‘to build or put together’ is correct,” or similar suggestions.</li> </ul> </li> <li>• Ask students to quickly add the term “construct” to their four-column charts.</li> <li>• Say something like: “Now you have a chance to review this section of the book a little more deeply to focus on determining the meaning of unknown words. Independently read pages 4–9 again. This time as you read, use your strategies to determine the meaning of the following words and record your thinking in your glossary.”</li> <li>• Display the following key terms where all students can see them: <i>defense, scientific method, affect, effects, fields, overwhelming, and repeating</i>”</li> <li>• Ask students to work with group members to complete a four-column chart for each word and use a variety of strategies to determine the meaning.</li> <li>• Allow students 5 to 6 minutes to read and discuss in groups the meaning of each term.</li> <li>• Circulate to provide support. Consider building on student knowledge of roots and affixes by sharing some or all of the following:             <ul style="list-style-type: none"> <li>– One meaning of the prefix “de-” is “completely.”</li> <li>– “Fend” is the root of the word “defense,” which means “to ward off or protect.”</li> </ul> </li> </ul>	



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"> <li>– The meaning of “over-” as a prefix is “excessive or too much.”</li> <li>– The root “-whelm” means “to submerge completely.”</li> <li>– The meaning of “re-” is “back or again.”</li> <li>– “Petere,” which means “to demand or seek,” is the root of the word “repeating,” so repeating is “seeking or demanding again.”</li> <li>• After 5 or 6 minutes, invite a few students to share out the meaning of each word. Listen for:             <ul style="list-style-type: none"> <li>– “I think defense is like guard because the text said ‘study which material is the best defense’ and guard would work in that sentence, too.”</li> <li>– “I think the scientific method is a process used to solve problems because on page 5, Max Axiom says, ‘Come on. I’ll take you through the scientific way to find answers,’” or similar responses.</li> </ul> </li> <li>• Pause after one or two students have shared a definition for “scientific method” and direct their attention to the frame/panel in the upper right-hand corner of page 5, “Steps of the Scientific Method.” Then read aloud the uppermost speech bubble in the frame/panel below, “The order or number of these steps can always change, but scientists often rely on these basic methods to organize information.”</li> <li>• Ask students to think about then discuss in groups:             <ul style="list-style-type: none"> <li>– “What do you think Max means by saying the order or number of these steps can always change?”</li> </ul> </li> <li>• After 1 or 2 minutes, invite a few students to share their thinking aloud with the class. Listen for ideas such as:             <ul style="list-style-type: none"> <li>– “I think he means that sometimes you might have to repeat a step or use steps in a different order than how they are listed on the tablet. For example, if you ask a question and then gather information, you might find that you have more questions you need to ask then you’ll need to gather more information,” or similar ideas.</li> </ul> </li> <li>• Take a moment to emphasize to students that while Max Axiom’s tablet lists the steps of the scientific method in a specific order, what he is trying to tell us here is that the scientific way to find answers is not something that needs to be done in a specific order with a specific number of steps.</li> <li>• Continue to cold call students to share out definitions for the remaining key terms. Listen for:             <ul style="list-style-type: none"> <li>– “I think affect means to impact or make a difference because it is used as a verb in that sentence and to impact and make a difference are verbs meaning similar things in the sentence ‘Does the number of boats impact the amount of pollution of the river?’”</li> </ul> </li> </ul>	



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"> <li>– “I think effects means impacts or influence because it is used as a noun in that sentence and impacts and influence are nouns with similar meanings.”</li> <li>– “I think fields means subject because Max said, ‘scientists work in many fields’ and I don’t think it’s fields like soccer or football fields. It’s like things you can study.”</li> <li>– “I think overwhelming means impossible to handle or too much because the text said something like the amount of information can be overwhelming. Too much to handle or impossible would work in that sentence, too.”</li> <li>• Ask students:               <ul style="list-style-type: none"> <li>* “Were you able to figure out the meaning of any of these words by using context clues? If so, what other words and/or sentences helped you determine what the word meant?”</li> <li>* “Were you able to figure out the meaning of any of these words by thinking about the parts you know, like roots and affixes? If so, which roots or affixes do you know that helped you determine what the word meant?”</li> </ul> </li> <li>• Direct students’ attention to the key word boxes on their <i>Max Axiom: Details and Visual Elements</i> graphic organizer. Note that there is an academic key word box and a scientific key word box.</li> <li>• Explain to students that in this module they will focus on two different types of words: scientific (words about science) and academic (words they will see in a variety of texts, which have varied meanings depending on the context).</li> <li>• Suggest to students that they mark academic words with a capital “A” next to the word in their four-column chart and scientific words with a capital “S.”</li> <li>• Give students 2 minutes to discuss with their group to determine whether each word is academic or scientific.</li> <li>• Then, refocus whole group. Invite a volunteer to share whether his or her group believes the word construct is academic or scientific. Encourage the group speaker to explain the reasoning for his or her group’s decision. Continue by calling on a member of another group to share their thinking about the word defense. Repeat until all groups have shared at least once and all words have been addressed.</li> <li>• After hearing students’ thoughts, reveal the actual sorting of academic and scientific words by saying: “Construct, defense, affect, effects, fields, overwhelming, and repeating are academic key words because you will encounter them in a variety of texts, not just when you’re reading about science.” Tell students to quickly record each of these terms in the “Key Words (academic)” box on their graphic organizers. As time allows, encourage students to think about, discuss, and share out other times they might see the words “affects,” “effects,” “fields” and “overwhelming.”</li> </ul>	



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"><li>• Tell students to add the term “scientific method” to the “Key Words (scientific)” box on their graphic organizers. Explain that this is an example of scientific vocabulary because the only time this term is likely to be featured is in a scientific context.</li><li>• Say: “The reason we work with vocabulary so intentionally as readers is because understanding words helps us deepen our understanding of what we read. Now that you have a clear understanding of key vocabulary from this section, you are invited to go back to your graphic organizer and revise the details you paraphrased from the text to explain how to ask scientific questions or gather information, as well as your thinking about how information boxes and gutters support your understanding of the first two steps in the scientific method.”</li><li>• After 1 or 2 minutes, invite students to share out some revisions made to their graphic organizer to reflect their deeper understanding of key terms.</li><li>• Celebrate students’ ability to paraphrase quotes from a text when describing the first steps of the scientific method and their ability to analyze how visual elements contribute to the meaning of what they read.</li></ul>	



Closing and Assessment	Meeting Students' Needs
<p><b>A. Debrief and Reviewing Learning Targets (5 minutes)</b></p> <ul style="list-style-type: none"> <li>• Tell students that they will use Learning Lineup protocol to review the learning targets.</li> <li>• Designate one end of the room where students will stand if they feel they are experts (completely understand and can apply understanding); and an opposite end of the room where students will stand if they feel they are beginners (still not quite understanding the target). Explain that they will stand somewhere in the middle of expert and beginner if they feel they are practitioners (getting the idea about the learning target).</li> <li>• Read through each target and pause to ask students to line up to indicate their mastery of the target. Invite one or two students to share out the reason for their self-assessment after each target.</li> <li>• Distribute one <b>index card</b> to each student. Have them create a task card by recording the following prompt on their index card:             <ul style="list-style-type: none"> <li>* “Describe one close reading strategy you used while reading independently. Explain how you used the strategy to support your understanding of the text.”</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• For struggling writers, write the task on an index card in advance.</li> </ul>
Homework	Meeting Students' Needs
<ul style="list-style-type: none"> <li>• Complete your task card and bring to class as an entry task for the next lesson.</li> <li>• If you didn't finish in class, complete a four-column chart for each of the eight vocabulary words from this lesson in your journal glossary.</li> <li>• Read your independent reading book for at least 30 minutes and write a response to a second question from your Independent Reading Choice Board (from Lesson 1).</li> </ul>	<ul style="list-style-type: none"> <li>• Allow struggling writers to dictate their response to the task and choice board to someone at home to scribe for them, or to record their responses into a recording device.</li> <li>• Consider providing a recording of the text for struggling readers.</li> </ul>



EXPEDITIONARY  
LEARNING

# Grade 5: Module 2B: Unit 1: Lesson 2

## Supporting Materials



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*Max Axiom: Details and Visual Elements Graphic Organizer, Page 1*

How do authors structure text and use visual elements to engage and support readers' understanding of complex ideas?

**SECTION 1: "A WORLD OF QUESTIONS"**

**Step 1: Ask Questions**

Details that explain *how* to ask scientific questions:

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**Visual Element Focus: "Information Box"**  
*How does an information box support your understanding of the first step Max Axiom takes to solve a problem?*

Key Terms (scientific)

**Step 2: Gather Information**

Details that explain *how* to gather information:

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**Visual Element Focus: "Gutters"**  
*How do gutters support your understanding of the next step Max Axiom takes to solve a problem?*

Key Terms (academic)



Quote/Paraphrase Anchor Chart  
(For Teacher Reference)

Quote	Paraphrase
<p><b>Sample 1</b> “Come on. I’ll take you through the scientific way to solve a problem.”</p>	<p><b>Sample 1</b> <u>Example:</u> I’ll show you how to solve a problem the scientific way. <u>Bad Example:</u> <del>Come on. To solve a problem, I’ll show you the way that’s scientific.</del></p>
<p><b>Sample 2</b> “With more than 100 million web sites, the Internet is an information gold mine.”</p>	<p><b>Sample 2</b> <u>Example:</u> The internet is another great resource with tons of information. <u>Bad Example:</u> There are over 100 million web sites. <u>(this is not a great representation of the same idea)</u></p>



Quote/Paraphrase Anchor Chart  
(For Teacher Reference)

Quote	Paraphrase
<p><u>Possible direct quotes to describe asking questions:</u> <i>"First, choose a topic that interests you."</i></p> <p><i>"Form open-ended questions that can be answered with a thoughtful statement."</i></p> <p><i>"Consider the amount of time available and the cost involved."</i></p>	<p><u>Possible paraphrased quotes to describe asking questions:</u> <i>Think about a topic you're interested in.</i></p> <p><i>Stay away from questions that can be answered with "Yes" or "No."</i></p> <p><i>Think about how much time and money you have to spend on this question</i></p>
<p><u>Possible direct quotes to describe gathering information:</u> <i>"Librarians are great resources for finding the information you need."</i></p> <p><i>"Take notes, and record the book, article, or Web site where you found the information."</i></p> <p><i>"Teachers, engineers, or other scientists can provide details not available in books or on the Web."</i></p>	<p><u>Possible paraphrased quotes to describe gathering information:</u> <i>A great resource for finding information is the librarian.</i></p> <p><i>If you record the book or article where you find information, you can find it again if you need it.</i></p> <p><i>Experts like scientists and teachers can teach you things you may not find in books.</i></p>



*Max Axiom: Details and Visual Elements Graphic Organizer, Page 1*  
(Answers, for Teacher Reference)

How do authors structure text and use visual elements to engage and support readers' understanding of complex ideas?

**SECTION 1: "A WORLD OF QUESTIONS"**

Step 1: Ask Questions

Details that explain *how* to ask scientific questions:

- **Find a topic that's interesting to you.**
- **Use open-ended questions that you can answer with a thoughtful statement.**
- **You have to think about how much time you have and what the costs will be.**

Visual Element Focus: "Information Box"

*How does an information box support your understanding of the first step Max Axiom takes to solve a problem?*

**\*The open-ended question information box helped me understand how to select a good question because it gave an example of a yes-or-no question and an open-ended question. If I hadn't looked at that box, I might not understand the difference as well.**

Key Terms (scientific)  
**scientific method**

Step 2: Gather Information

Details that explain *how* to gather information:

- **Librarians can help you find important information.**
- **Write down the information you find, and record the name of the book or Web site where you found it.**
- **If you can't find the information in books, you can ask teachers, engineers, or scientists.**

Visual Element Focus: "Gutters"

*How do gutters support your understanding of the next step Max Axiom takes to solve a problem?*

**\*The gutters on page 8 help me see the separate scenes at the library. I see Max outside and then inside talking to the librarian, which is separate from the scene that shows him walking through the library. These separate scenes help me understand how much the library has to offer when gathering information.**

Key Terms (academic)  
**construct, defense, affect, effects, fields, overwhelming, and repeating**