



EXPEDITIONARY
LEARNING

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

Paraphrasing Quotes and Analyzing Visual Elements, Part 4: *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 draw evidence from literary texts to support analysis, reflection, and research. (W.5.9)

Supporting Learning Targets

- I can explain the last step 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 last step Max Axiom takes to solve a problem.
- I can draw evidence from the text and visual elements in *Max Axiom* to support my analysis of how Max Axiom used a process to solve a problem.

Ongoing Assessment

- Graphic Novel Template A, B, or C (from homework)
- Gist (in journal)
- *Max Axiom*: Details and Visual Elements graphic organizer, page 4
- Response to reflection questions (in journal)
- Open Response task card
- Independent Reading Choice Board response



Agenda	Teaching Notes
<ol style="list-style-type: none"> 1. Opening <ol style="list-style-type: none"> A. Reviewing Homework and Engaging the Reader (5 minutes) 2. Work Time <ol style="list-style-type: none"> A. Determining the Gist: <i>Max Axiom</i>, Section 4: “Sharing the Findings” (10 minutes) B. Second Read: Explaining the Last Step Max Axiom Takes to Solve a Problem and Analyzing Visual Elements (20 minutes) C. Writing Prompt: Drawing on Evidence and Visual Elements in Text to Support Analysis (20 minutes) 3. Closing and Assessment <ol style="list-style-type: none"> A. Debrief and Reviewing Learning Targets (5 minutes) 4. Homework <ol style="list-style-type: none"> A. Reread <i>Max Axiom</i>: Section 4 B. Finish Classwork C. Independent Reading 	<ul style="list-style-type: none"> • This lesson serves to familiarize students with the final step Max Axiom takes to solve a problem and the remaining visual elements found in a graphic novel. It also gives students an opportunity to synthesize their learning from Lessons 2–4 in preparation for the mid-unit assessment they take in the next lesson. • Aside from paraphrasing quotes, analyzing visual elements, and determining the meaning of key terms to support their understanding of the final step Max Axiom takes to solve a problem, students are asked to respond to a writing prompt that requires them synthesize their learning about Max Axiom’s process for solving a problem. Then, students are asked to refer back to specific pages from the text to consider and discuss how real world scientists might engage in a process of scientific inquiry that is different from the process Max Axiom uses. Emphasize to students that the process real world scientists use to develop solutions is not typically sequential, as it requires going back to repeat various stages of the experiment to refine their thinking until they are able to arrive at an accurate conclusion. This work not only prepares students to respond to similar questions on the mid-unit assessment, but also serves as a scaffold toward the final performance task: the creation of a graphic novelette to explain how an invention was developed to meet societal needs. • Note that today’s vocabulary work is incorporated into Work Time B to provide students with more time to analyze the text and respond to the synthesis question during Work Time C. • Be sure students do not read past page 23 during this lesson, since they will read pages 24–27 for the Mid-Unit 1 Assessment in Lesson 6. • In advance: <ul style="list-style-type: none"> – Display Vocabulary Strategies anchor chart (from Lesson 2). – Familiarize yourself with <i>Max Axiom</i>: Details and Visual Elements graphic organizer, page 4 (answers, for teacher reference) to be prepared to support students as they identify and analyze key details and visual elements in Work Time B. – Consider displaying the writing prompt to save time during Work Time C. – Review Fist to Five (see Appendix).



Lesson Vocabulary	Materials
explain, steps, quotes, analyze, visual elements, contribute, evidence, process, communicate, results, account, display (22), common, traits, abstract, unraveling (23)	<ul style="list-style-type: none"> • <i>Investigating the Scientific Method with Max Axiom Super Scientist</i> (book; one per student) • Journals (students' own, begun in Lesson 1) • <i>Max Axiom: Details and Visual Elements</i> graphic organizer, page 4 (one per student) • Visual Elements of a Graphic Novel reference page (from Lesson 1, taped into journals) • Vocabulary Strategies anchor chart (from Lesson 2; one for display) • <i>Max Axiom: Details and Visual Elements</i> graphic organizer, page 4 (answers, for teacher reference)

Opening	Meeting Students' Needs
<p>A. Reviewing Homework and Engaging The Reader (5 minutes)</p> <ul style="list-style-type: none"> • Have students share their completed Graphic Novel Template, A, B, or C with a classmate. Ask them to discuss the following questions: <ul style="list-style-type: none"> * "Which visual elements did you incorporate to emphasize key details about a main character(s) from your independent reading?" * "How do these visual elements help communicate the ideas on your template?" • After 2 or 3 minutes, cold call several students to share how their partners used visual elements to communicate ideas. Encourage students to explain how the visual elements supported key understanding about the event described on the template. Answers will vary. • Tell students that today they will explore the remaining visual elements and how they support their understanding of the final step Max Axiom takes to solve a problem. Remind students that their homework task and analysis of the information presented in <i>Max Axiom</i> will help them prepare for planning and creating their own graphic novelette in Unit 3 . 	<ul style="list-style-type: none"> • Provide sentence starters to support student discussions: "The visual elements I used are _____," or "These visual elements communicate the ideas on my template because _____."



Work Time	Meeting Students' Needs
<p>A. Determining the Gist: <i>Max Axiom</i>, Section 4: “Sharing the Findings” (10 minutes)</p> <ul style="list-style-type: none"> Ask students to locate their text <i>Investigating the Scientific Method with Max Axiom Super Scientist</i> and their journals then join their small groups from Lessons 1–4. Explain that in today’s lesson, students will closely read only a part of Section 4 of <i>Max Axiom</i> as a group to analyze the text for understanding of the final step in the scientific method (ensure students do not read past page 23, as they will read pages 24–27 for the Mid-Unit 1 Assessment in Lesson 6). Give students an opportunity to check in with their group members about the group norm goal they created in the last lesson. If students struggled with meeting their previous goal, they should identify strategies to continue working on it today. If, as a group they feel they achieved their goal, ask them to create a new goal for today’s work. After 2 to 3 minutes, cold call a student from each group to share out with the class. Listen for examples such as: <ul style="list-style-type: none"> “We are going to keep asking questions like, ‘What do you think?’ or ‘Do you have anything to add to my idea?’ to encourage all of our group members to share.” “We think we did a good job with our goal about asking for clarity, but we are going to keep working on it today because it really helped our discussion.” “We created a new goal that everyone in our group will try to share equally because last time some people were talking most of the time, and we want to make sure everyone gets to participate.” Give students specific positive feedback for ways in which they are recognizing the needs of the diverse members of their group and developing strategies to help improve the discussion for everyone. Tell students that, just as in prior lessons from this unit, today’s first read will be for gist. Cold call a few students to explain reading for gist. Listen for: <ul style="list-style-type: none"> “The gist is a really broad statement about what the text or the section of text is generally about.” “There could be more than one right answer for the gist.” “Reading for gist helps you understand the general meaning of the text so you can focus on understanding the deeper meaning when you read a second time,” or similar responses. Ask students to open their books to page 22. Direct them to read <u>only</u> pages 22 and 23 as a group (see Teaching Note). Ask them to alternate panels they read aloud. While one student is reading a panel aloud, other group members should follow along silently in their own text. Remind students to consider and discuss the gist as they work. 	<ul style="list-style-type: none"> Provide sentence frames to support student discussions about group norms: “We struggled with _____ norm, so we will continue to work on it by _____,” or “We mastered our last norm so we are going to work on _____ today because our group needs to practice _____ to work better together.” For students who struggle to determine the gist of longer passages, encourage them to find the gist of facing pages to keep track as they go and make it more manageable to determine the gist of the entire section. Allow struggling writers to dictate their gist statement to a peer or aide acting as a scribe.



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"> After 4 or 5 minutes, or as groups seem to complete the task, cold call a student from each group to share the gist. Listen for: <ul style="list-style-type: none"> “Max is sharing his results with the mayor and her team.” “Max is explaining how to share the results of a scientific experiment,” or similar responses. Give students 1 minute to record their gist statements on the same page in their journal where they recorded their previous gist statements. 	
<p>B. Second Read: Explaining the Last Step Max Axiom Takes to Solve a Problem and Analyzing Visual Elements (20 minutes)</p> <ul style="list-style-type: none"> Say: “Now that we understand the gist of these pages, let’s review the first two learning targets to help focus our attention as we read even more closely.” Read the learning targets aloud or invite volunteers to read them aloud: <ul style="list-style-type: none"> * “I can explain the last step Max Axiom takes to solve a problem by paraphrasing information from <i>Max Axiom</i>.” * “I can analyze how visual elements in <i>Max Axiom</i> contribute to my understanding of the last step Max Axiom takes to solve a problem.” Draw students’ attention to the following key vocabulary they are familiar with from previous lessons: <i>explain, steps, “paraphrasing,” analyze, visual elements, and contribute</i>. Remind students that while challenging, the terms should seem more familiar now. Encourage them to quickly review the meaning of terms in their groups. After 1 or 2 minutes, cold call several students to share definitions for each term. Listen for: <ul style="list-style-type: none"> “Explain means to describe with details or to teach others.” “Steps means stages or phases in a process, like steps to follow to complete a recipe.” “Paraphrasing means restating in your own words.” “Analyze means to study carefully.” “Visual elements are things the author does with text or pictures to draw our attention.” “Contribute means to add to or support,” or similar responses. Point out that the learning targets for this lesson are very similar to the targets they’ve been working on over the past few days. 	<ul style="list-style-type: none"> 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. To support visual learners, consider allowing students from each group to display an example of the visual element (ambient sounds or text type) under the document camera. For students who struggle with the physical act of writing, allow them to type their responses on a computer or word processor, or dictate to an aide or peer acting as a scribe.



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none">• Distribute Max Axiom: Details and Visual Elements graphic organizer, page 4. Remind students that this graphic organizer helps them capture their thinking as they work toward today's targets. Invite several students to explain the steps for completing the graphic organizer. Listen for the following details. If students do not independently express these ideas, ask targeted questions to remind them:<ul style="list-style-type: none">– “We find details in the text that explain how to collect data and analyze data and draw conclusions. Then we paraphrase, or say in our own words, the details we found and record them next to the bullet points.”– “To paraphrase we restate the ideas in our own words, but make sure it still sounds natural and means the same thing.”– “We read the visual element focus and think about how that visual element helps us understand these steps Max Axiom takes to solve a problem. We discuss our ideas with our group. Then we record our thoughts under the question on the graphic organizer.”– “We can use the Visual Elements of a Graphic Novel reference page taped into our journals to help us learn more about the visual elements.”• Direct students to look at the key terms located at the top of their <i>Max Axiom: Details and Visual Elements</i> graphic organizer, page 4. Read each term aloud then explain that in today's lesson, students must consider the key vocabulary as they complete the graphic organizer. Refer to the posted Vocabulary Strategies anchor chart and remind students to select and apply strategies that help them determine the meaning of each word to help them make sense of the text. Encourage students to work as a group to complete the four-column chart in their glossaries and sort the terms on their graphic organizers after they record paraphrased quotes and analyze the visual elements.• Ask students to consider and discuss how the graphic organizer will help them meet today's learning targets.• After 1 to 2 minutes, cold call a few students to share their thoughts. Listen for:<ul style="list-style-type: none">– “When we record the details next to the bullet point, it helps us work on the first target because we have to paraphrase information about the last step Max Axiom takes to solve a problem.”– “The question on the bottom of the panel in our graphic organizer makes us think about the visual elements and how they help us understand the ideas better. That helps us work on the second target,” or similar responses.• Direct students to collaborate with their group to read pages 22 and 23 a second time and complete the graphic organizer.• After 7 or 8 minutes, refocus whole group. Ask students to share out their paraphrased quotes from the text that explain how to design an experiment and collect data. Refer to Max Axiom: Details and Visual Elements graphic organizer, page 4 (answers, for teacher reference) as needed.	



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none">• Cold call several students from different groups to share examples of each of the visual elements they found. Listen for:<ul style="list-style-type: none">– The example of “ambient sounds” is: “Wwhirrrrrrr” (page 22)– Examples of “text type” could include:<ul style="list-style-type: none">• Color, size, and font of “Conference Room” (page 22)• Size and font of “Project Report” (page 22)• Color and font of “Data, Journal, Abstract, and Model” (page 23)• Invite a student from each group to share their response to the following question from their graphic organizers:<ul style="list-style-type: none">* “How do ambient sounds and text type support your understanding of the last step Max Axiom takes to solve a problem?”• Give students 4 or 5 more minutes to determine and record the meaning of key terms listed at the top of their graphic organizers: <i>communicate, results, account, display, common, traits, abstract, AND unraveling</i>. If time allows, ask students to sort each term into the appropriate key word box on their graphic organizer.• After 4 to 5 minutes, ask students from each group to help define the key terms. Listen for:<ul style="list-style-type: none">– “Communicate means to share or tell.”– “Results are conclusions, answers.”– “Account means a record, like the notes you keep.”– “Display means to show.”– “Common means shared or something that is the same.”– “Traits are characteristics or qualities.”– “Abstract in this context means a short summary of the scientific findings.”• “Unraveling in this context means making something understandable,” or similar responses.• Congratulate students on their in-depth analysis of information and visual elements found in <i>Max Axiom</i> over the past few lessons. Explain that this analysis not only helps them develop their understanding of a complex topic, such as how scientists use a process of scientific inquiry to solve problems, but it also supports their learning through the rest of this module as they study real inventions that were developed to meet people’s needs. In particular, their work over the past few lessons is an important part of their understanding of how to create their own graphic novelettes in Unit 3.	



Work Time (continued)	Meeting Students' Needs
<p>C. Writing Prompt: Drawing on Evidence and Visual Elements in Text to Support Analysis (20 minutes)</p> <ul style="list-style-type: none"> Read the last learning target aloud: <ul style="list-style-type: none"> * “I can draw evidence from the text and visual elements in <i>Max Axiom</i> to support my analysis of how Max Axiom used a process to solve a problem.” Focus students on these familiar terms: “evidence,” “visual elements,” “support,” and “analysis”. Remind students they have worked with these terms quite a bit, and that these words are used in a new target in this lesson. Then ask: <ul style="list-style-type: none"> * “In this target, what do you think the word ‘process’ means?” After 1 minute, invite a few students to share their thinking whole group. Listen for: <ul style="list-style-type: none"> – “I think a process is a method, course of action, or series of steps, because Max Axiom took several steps to develop a solution to the mayor’s problem.” If students are not able to define “process” accurately, define it for them. Continue to reinforce that the scientific method or process is more iterative than linear. Next, ask students to take a moment to think about the meaning of each key term in the context of this new target and discuss their thinking with group members. After 1 or 2 minutes, ask students to consider and discuss: <ul style="list-style-type: none"> * “What does this learning target really mean?” After 1 or 2 minutes, invite students to share their ideas. Listen for: <ul style="list-style-type: none"> – “It means we need to use information we learned and visual elements in <i>Max Axiom</i> to explain how Max solved a problem,” or similar responses. Remind students that after completing each page of their <i>Max Axiom: Details and Visual Elements</i> graphic organizer, they responded to a reflection question, using information from the text to support their ideas. Tell them that now that they have learned about the final step Max Axiom took to solve a problem, they get to synthesize their learning. Display the following writing prompt: <ul style="list-style-type: none"> * “How did Max Axiom use a scientific process to solve a problem? Use details from the text and visual elements to explain your thinking.” Clarify terms as needed. Ask students to discuss their thinking in groups then respond to the writing prompt on a new blank page in their journals. 	<ul style="list-style-type: none"> To support visual learners and ELL students, display a drawing, image from the internet, or familiar synonym above or below key words in the learning target. Consider using Think-aloud protocol, either whole class or with a small group, to model using vocabulary strategies for the first several terms. 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.” Provide sentence frames to support struggling writers: “Max Axiom used solved the problem by _____,” or “The visual elements that most helped me understand how scientists could use the scientific method to solve problems are _____ because _____.”



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"> After 7 to 8 minutes, invite several students to share their ideas with the class. A possible student response could be: <ul style="list-style-type: none"> “Max Axiom used various steps to help him determine which material is best for building a levee so he could save the city from flooding. On the splash page, Max learned that they needed to build the strongest levee possible to prevent river water from seeping into the city. The process he used helped him organize his ideas and figure out how to solve the problem and build the best levee. He developed a question and then used information he collected from the library to make a hypothesis and design his experiment. The data he collected helped him learn that the clay levee held back more water than the rock or soil levees. His hypothesis was correct! He shared the information with the mayor so she could build a strong levee and the city wouldn’t flood.” Next, ask students to look back to page 5 of the text and focus on the upper-most speech bubble in the lower right-hand frame/panel, “The order or number of these steps can always change, but scientists often rely on these basic methods to organize information.” Pose the following question for students to consider and discuss with group members: <ul style="list-style-type: none"> “How might real world scientists engage in a process of scientific inquiry that is different from the process Max describes throughout the novel?” Encourage students to go back to the text, particularly pages 9, 11, 19, 21, 22, and 23, to help them formulate a response to the question. Provide clarification as necessary, then circulate to offer support and guidance. After 3 or 4 minutes, invite students from each group to share their thinking with the class. Remind them to support their ideas with information from the text. Listen for: <ul style="list-style-type: none"> “One way a scientist’s process may differ from Max Axiom’s is that they will repeat steps. I think this because on page 9 Max says ‘... repeating the original research can never hurt.’” “On page 11, Max says, ‘don’t worry about the hypothesis being correct ...,’ so I think that once scientists gather more data they may go back and revise their original hypothesis before continuing or repeating other steps of the process. I think scientists will organize their data differently, and not use all the types of graphs shown in the graphic novel because on page 19 Max points out that ‘Not every type of chart or graph is needed for every project.’” “I think that some scientists will repeat their experiments to double-check how correct their results are because on page 21, Max explains, ‘If there’s time, scientists double-check the accuracy of the conclusion by repeating the experiment.’” “I think scientists will present their information in different ways because on pages 22 and 23, Max describes many different ways that scientists can communicate their results like publishing a report, presenting to teachers, students, or judges, and building different types of science project displays,” and similar suggestions. 	<ul style="list-style-type: none"> For student reference, write the question and the page numbers they are encouraged to review on the board or a piece of chart paper.



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"> • Reiterate to students that the process of scientific inquiry is not linear, but rather it requires scientists to go back to various stages of their process to refine their thinking and try different things to arrive at an accurate conclusion. • Praise students for their ability to draw evidence from the text to support their analysis of how Max Axiom and real world scientists use various processes to develop solutions that meet the needs of society. 	

Closing and Assessment	Meeting Students' Needs
<p>A. Debrief and Reviewing Learning Targets (5 minutes)</p> <ul style="list-style-type: none"> • Ask students to consider and discuss: <ul style="list-style-type: none"> * “Which visual elements did you find most helpful for learning about the process Max Axiom used to solve a problem?” • After 1 or 2 minutes, invite several students to share out whole class. Listen for students to offer comments such as: <ul style="list-style-type: none"> – “The visual element that supported my understanding the most was the splash page. The splash page really helped me understand the problem. It especially helped to see the close-up image of the mayor’s eye because it helped me to realize that this was a very big problem for the city. The splash page also helped me learn steps that scientists can take to develop solutions to a problem.” – “The images on the splash page supported my understanding, but so did the other images. The images of Max rushing to the helicopter, entering the conference room, and presenting his results helped me understand that if scientists communicate their results, the information can be used to solve problems before they become disastrous.” • Read or invite students to read each of the learning targets aloud. • Remind students of their previous conversation about how <i>Max Axiom: Details and Visual Elements</i> graphic organizer helped them capture their thinking as they worked toward mastery of each target. Direct students to take a few moments to look through all four pages of their graphic organizer and consider their progress toward meeting the learning targets. • After 2 minutes, have students use Fist to Five to show how they feel about their progress. If any students showed fewer than three fingers, consider providing ways to revisit the content before the Mid-Unit 1 Assessment. • Inform students they will take the Mid-Unit 1 Assessment in the next lesson. 	<ul style="list-style-type: none"> • Display the learning targets for student reference.



Homework	Meeting Students' Needs
<ul style="list-style-type: none">• Reread only pages 22–23 of <i>Max Axiom</i>. Add to or revise at least one area of your <i>Max Axiom</i>: Details and Visual Elements graphic organizer based on new insights from your reread of the text or new understandings about key terms.• If not finished in class, complete the four-column chart for each vocabulary word from this lesson, and sort key terms into the academic or scientific key word boxes on your graphic organizer.• Read your independent reading book for at least 20–30 minutes, and write a response to a fourth question from your Independent Reading Choice Board (from Lesson 1).	<ul style="list-style-type: none">• Allow struggling writers to dictate their responses to someone at home.• Consider providing a recording of the text for struggling readers.



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Supporting Materials



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Max Axiom: Details and Visual Elements Graphic Organizer, Page 4

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

Key Terms: communicate, results, account, display, common, traits, abstract, unraveling

SECTION 4: "SHARING THE FINDINGS"

Step 7: Communicate Results

Details that explain *how* to communicate results

- _____
- _____

Visual Elements Focus: "Ambient Sounds" and "Text Type"

How do ambient sounds and text type support your understanding of the final step Max Axiom takes to solve a problem?

Key Terms
(scientific)

Key Terms
(academic)



Max Axiom: Details and Visual Elements Graphic Organizer, Page 4
(Answers, for Teacher Reference)

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

Key Terms: communicate, results, account, display, common, traits, abstract, unraveling

SECTION 4: "SHARING THE FINDINGS"

Step 7: Communicate Results

Details that explain *how* to communicate results

- **You could write a project report or create a presentation to share with teachers, students, or judges.**
- **A presentation frequently includes data, a detailed account of the experiment, an abstract, and a model.**

Visual Elements Focus: "Ambient Sounds" and "Text Type"

How do ambient sounds and text type support your understanding of the final step Max Axiom takes to solve a problem?

The "wwhirrrrrrr" from the plane helped me realize that it's very important to communicate ideas quickly. The different font and colors for "Conference Room," "Project Report," "Data," "Journal," "Abstract," and "Model" help me understand important ways a scientist can communicate results.

Key Terms
(scientific)

abstract

Key Terms (academic)

***communicate,
results, account,
display, common,
traits, unraveling***