



EXPEDITIONARY  
LEARNING

# **Grade 4: Module 3A: Unit 2: Lesson 5**

## **Reading Scientific Text: Reading Closely about the Lever**



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

I can determine the meaning of academic words or phrases in an informational text. (RI.4.4)  
I can determine the meaning of content words or phrases in an informational text. (RI.4.4)  
I can explain the main points in a scientific text, using specific details in the text. (RI.4.3)  
I can choose evidence from informational texts to support analysis, reflection, and research. (W.4.9)

**Supporting Learning Targets**

- I can find the meaning of scientific and academic words as I read a text about levers.
- I can determine important information about levers and how they help people do work.
- I can document what I learn about levers in my own words.

**Ongoing Assessment**

- Simple Machines Science journal (page 14)
- Vocabulary note-catcher
- Diagram
- Constructed response questions
- Captions



Agenda	Teaching Notes
<ol style="list-style-type: none"><li>1. Opening<ol style="list-style-type: none"><li>A. Engaging the Reader and Writer and Checking on Homework (5 minutes)</li><li>B. Reviewing Learning Targets (5 minutes)</li></ol></li><li>2. Work Time<ol style="list-style-type: none"><li>A. Shared Reading for New Vocabulary (20 minutes)</li><li>B. Rereading to Visualize Scientific Processes (20 minutes)</li></ol></li><li>3. Closing and Assessment<ol style="list-style-type: none"><li>A. Writing a Scientific Caption to Synthesize Learning (10 minutes)</li></ol></li><li>4. Homework<ol style="list-style-type: none"><li>A. Look for levers around you (at school or at home). Record examples to share in our next lesson. Either take pictures of the levers, make a sketch of what you saw, or use words to describe what you saw.</li></ol></li></ol>	<ul style="list-style-type: none"><li>• The structure of this lesson is similar to Lesson 3. The students will reread pages 24–25 in <i>Simple Machines: Forces in Action</i> more deeply, analyzing new scientific vocabulary words and locating specific text-dependent information about levers. However, in this lesson, students first work independently of the teacher. They then discuss their thinking as a class with the teacher facilitating the analysis of the work.</li><li>• In advance: Make a Levers anchor chart with three sections (see model in supporting materials).</li><li>• Post: Learning targets.</li></ul>



Lesson Vocabulary	Materials
load Review: work, effort, force, lever, fulcrum	<ul style="list-style-type: none"><li>• Levers anchor chart (newly created)</li><li>• Sticky notes (one per student)</li><li>• <i>Simple Machines: Forces in Action</i> pages 24–25 (book; one per student)</li><li>• Simple Machines Science journal (page 14: Lever Research Notes)</li><li>• Equity sticks</li><li>• Blank paper (one piece for each pair of students)</li></ul>



Opening	Meeting Students' Needs
<p><b>A. Engaging the Reader and Writer and Checking on Homework (5 minutes)</b></p> <ul style="list-style-type: none"> <li>Remind students that their homework was: "Write a gist statement for pages 24 and 25 in your <i>Simple Machines</i> text. You will be sharing this with the class tomorrow to post on the <b>Levers anchor chart</b>, which will also be introduced tomorrow.." Ask students to mingle and share their gist statements with at least two other students. After each has shared their statement, tell them to explain why they think theirs is a good one. After they've shared with at least two or three people, give the students 1 or 2 minutes to revise their statements if they think they can make it better based on their conversations.</li> <li>Ask them to write their final gist statement and names on a <b>sticky note</b>. Post the gist statements in the top section of the Levers anchor chart.</li> </ul>	
<p><b>B. Reviewing Learning Target (5 minutes)</b></p> <ul style="list-style-type: none"> <li>Invite students to read the first learning target: "I can find the meaning of scientific and academic words related to the lever." Review the difference between <i>scientific</i> and <i>academic</i> words.               <ul style="list-style-type: none"> <li><i>scientific</i>: words used specifically in science-related texts and conversations</li> <li><i>academic</i>: words often seen in other texts and content areas and that are important to understanding the main ideas of the texts.</li> </ul> </li> <li>Remind them that knowing the difference between these types of words will help them determine the importance of vocabulary and therefore they'll understand the text better. Remind students they will keep track of important academic and scientific vocabulary in their Simple Machines Science journals so they become better readers and writers of scientific texts.</li> <li>Invite them to read the next two learning targets: "I can determine important information about levers and how they help people do work," and "I can document what I learn about levers in my own words." Ask students to give a thumbs-up if they understand the learning today, a thumbs-sideways if they are somewhat clear, and a thumbs-down if they are completely unsure. Clarify as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Using learning targets helps students understand the purpose for the reading.</li> <li>Providing visual cues or synonyms helps students understand the learning targets.</li> </ul>



Work Time	Meeting Students' Needs
<p><b>A. Shared Reading for New Vocabulary (20 minutes)</b></p> <ul style="list-style-type: none"> <li>• Distribute <b><i>Simple Machines: Forces in Action</i> pages 24–25</b> and the <b>Simple Machines Science journals</b>. Tell students they will reread pages 24–25. Ask students to join their science partners from the experiment in Lesson 4. Explain the partnerships will read the text together (taking turns or choral reading) and underline unfamiliar or difficult words. (Students may mark in the text, highlight, or use evidence flags/sticky notes.) Remind them that a word might be unfamiliar to someone if he or she can't sound it out or if he or she doesn't know what it means. Acknowledge that some of the words may be somewhat familiar from the experiment in Lesson 4.</li> <li>• Give the students 3 to 5 minutes to read pages 24–25 and annotate key vocabulary words.</li> <li>• Then draw their attention to the bolded words: <i>lever</i>, <i>fulcrum</i>, and <i>load</i>. Remind students that you discussed the basic definitions of these words in the last lesson, before they did the experiment. Explain that now they will record the definitions in their Science journals as well as personal clues for remembering what these words mean.</li> <li>• Explain that these are scientific words and it will be important to know what they mean and how they connect to simple machines to understand what a lever is and does. Ask students to find these key vocabulary words in the Vocabulary section of their Science journals.</li> <li>• Ask students to review the definitions for these three words based on the text and what they learned by conducting the experiment in Lesson 4. They need to write their definitions in the second column of the Vocabulary section of their Science journals.</li> <li>• Give the students 5 minutes to complete this task.</li> <li>• Gather students together and ask them to form groups of four (two partnerships) to share their definitions. Encourage them to explain why they think their definitions are accurate descriptions of the meaning of the words. Invite them to revise their definitions based on what they discuss with their peers if it improves their work.</li> <li>• Distribute three sticky notes to each group of four. Ask them to write one word on each sticky note along with the group's definition. Each group will have a representative share their definitions with the class. Use the following steps to record new words to the middle section of the Levers anchor chart:</li> </ul>	<ul style="list-style-type: none"> <li>• Students who struggle with language benefit from having their own individual dictionaries for reference throughout the module.</li> <li>• Deconstruction of complex vocabulary words or phrases to understand meaning helps all students with comprehension of text.</li> <li>• Provide nonlinguistic symbols (e.g., two circles connected for <i>interconnected</i>) to assist ELLs and other struggling readers in making connections with vocabulary.</li> </ul>



Work Time (continued)	Meeting Students' Needs
<ol style="list-style-type: none"><li>1. Ask a representative from each group to share the same word and its definition.</li><li>2. As a class discuss the similarities of the different definitions of the same word.</li><li>3. Encourage students to revise the definitions in their Science journals if they think it would improve their understanding of the word.</li><li>4. Group all similar sticky notes in the middle section of the anchor chart together.</li><li>5. Repeat the process until all words are posted on the anchor chart.</li></ol> <ul style="list-style-type: none"><li>• Ask: "How are the words <i>force</i>, <i>effort</i>, and <i>work</i> each connected to levers? Make sure to use evidence from the text to support your thinking."</li><li>• Invite them to look back into the text as they turn and talk with their science partners.</li><li>• Use <b>equity sticks</b> to cold call two to three students to share. Listen for comments such as: "A lever helps move a load by applying force either by pushing or pulling," or "It takes less effort to move a load if you use a lever."</li><li>• Give students 10 minutes to do the following:<ol style="list-style-type: none"><li>1. Add their new understanding of how <i>work</i>, <i>effort</i>, and <i>force</i> are connected to levers in the Vocabulary section of their Science journals (fourth column).</li><li>2. Complete the last two columns for <i>lever</i>, <i>fulcrum</i>, and <i>load</i> so they remember what the words mean and how they connect to simple machines.</li><li>3. Add any other words they have identified as unfamiliar that they think will help them understand levers more clearly. These can be academic words (i.e., <i>apply</i>, <i>consists</i>, <i>trade-off</i>).</li></ol></li></ul>	



Work Time (continued)	Meeting Students' Needs
<p><b>B. Rereading to Visualize Scientific Processes (20 minutes)</b></p> <ul style="list-style-type: none"><li>• Remind students that throughout this module, they are thinking about the big question: “How do simple machines affect our lives?” In order to answer this big question, they need to think about how each simple machine helps people do work. Tell students that in a moment, they will reread the text with this in mind.</li><li>• Reorient students to page 14 in their Simple Machines Science journal. Tell students they will need to record the same type of information about the lever as they did about the inclined plane in Lesson 3.</li><li>• Before students reread, review some key points:<ul style="list-style-type: none"><li>– Remind students that good readers often read an unfamiliar and complex text several times.</li><li>– As with the inclined plane text, they may be familiar enough with the lever text after reading it two times that they could fill in some of the parts of this note-catcher without even looking at the text.</li><li>– Reiterate that scientists strive to confirm facts.</li><li>– Remind students that rereading will help them find more evidence from the text to answer the question about how inclined planes help people do work.</li></ul></li><li>• Ask the following question to focus students’ rereading:<ul style="list-style-type: none"><li>* “How do levers help people do work? Use evidence from the text to support your answer.”</li></ul></li><li>• Before the students begin reading, distribute a piece of <b>blank paper</b> to each partnership. Ask students to fold it in half.</li><li>• Ask students to read silently to themselves as you read aloud. Draw their attention to the first paragraph on page 25, specifically where it states: “If the fulcrum is the same distance between both people on the seesaw, you will be stuck.” Remind them of how a reader can deconstruct sentences to help them understand complex scientific content. Review the steps they learned in Lesson 3 and explain that the same process can be used in analyzing a complex paragraph.</li></ul>	



Work Time (continued)	Meeting Students' Needs
<ol style="list-style-type: none"><li>1. Ask them to reread just that first sentence: "If the fulcrum is the same distance between both people on the seesaw, you will be stuck."</li><li>2. Ask students to turn and talk with their partner about the sentence. Listen for: "If the fulcrum is in the middle between two loads, nothing will move," or "If one person is heavier than another on a seesaw, and the bar [fulcrum] is in the middle, the lighter person won't be able to go up."</li><li>3. Ask students to draw a picture on the left half of their paper that helps them understand this first part of the sentence.</li><li>4. Ask students to hold the paper up when they're finished so you can check for understanding. Look for pictures that are similar to a slanted line with a point (fulcrum) in the middle with an object at the bottom end and a larger object at the top end.</li></ol> <ul style="list-style-type: none"><li>• Repeat the paragraph deconstruction process with the next sentence.<ol style="list-style-type: none"><li>1. Read aloud as students read silently in their heads: "But if the heavier person moves closer to the fulcrum and you move further from the fulcrum, you will be able to lift your load with less effort."</li><li>2. Ask students to turn and talk with their partner about that part of the sentence. Listen for responses similar to: "If the lighter load is further away from the fulcrum, then the heavy load can be lifted."</li><li>3. Ask students to draw a picture on the right half of their paper that helps them understand this first part of the sentence.</li><li>4. Ask students to hold the paper up when they're finished so you can check for understanding. Look for pictures that show the smaller load further away from the fulcrum than the heavier load. The line will be either straight or the heavier load will be at the top of a slanted line.</li></ol></li><li>• Give students 15 minutes to complete the task of rereading pages 24–25 in <i>Simple Machines: Forces in Action</i> and taking notes on page 14 in their Science journals. Encourage them to use the process of deconstructing complex sentences and paragraphs if they are unsure of what the text is describing.</li><li>• Circulate to listen in and support as needed. To deepen students' analysis, ask questions such as: "What does the author want you to understand about levers?" or "How could the author have been more clear about explaining what levers are and how they work?" Make sure they connect their comments back to the text.</li></ul>	



Closing and Assessment	Meeting Students' Needs
<p><b>A. Writing a Scientific Caption to Synthesize Learning (10 minutes)</b></p> <ul style="list-style-type: none"><li>As a way of synthesizing their learning about levers, ask students to write a <i>caption</i> for the graphic of a lever on the cover of their Simple Machines Science journal. Remind them that captions are short (one to two sentences) texts that describe the importance of an image or graphic.</li></ul>	<ul style="list-style-type: none"><li>Using sentence frames can help ELLs articulate their learning. (e.g. "A lever is _____ [description of how it looks]. Inclined planes help people move _____ [description of "thing"] things by _____.")</li></ul>
Homework	Meeting Students' Needs
<ul style="list-style-type: none"><li>Look for levers around you (at school or at home). Record examples to share in our next lesson. Either take pictures of the levers, make a sketch of what you saw, or use words to describe what you saw.</li></ul> <p><i>Note: After each lesson, add new scientific terms and academic vocabulary to your class Word Wall in addition to the work you did with the class anchor charts. In order to help students build knowledge about this topic, students need to be surrounded by key vocabulary so that they will be more apt to use it in conversation, not just science writing. Add the words: lever, fulcrum, load. Some of the academic words the students may identify are: apply, consists, trade-off.</i></p>	



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## Supporting Materials



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**Levers Anchor Chart**  
(For Teacher Reference)

*(Example is not to scale—create this anchor chart in advance)*

Levers
<p><b>Gist Statements:</b></p> <p>(Student sticky notes)</p>
<p><b>Important Vocabulary to Know:</b></p> <p>(Student sticky notes)</p>
<p><b>Examples of Levers in Our Lives:</b></p> <p>(Student sticky notes)</p>