



EXPEDITIONARY
LEARNING

Grade 4: Module 3A: Unit 2: Lesson 6

Science Talk: Synthesizing What We Know about the Inclined Plane and Lever



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Long-Term Targets Addressed (Based on NYSP12 ELA CCLS)	
<p>I can effectively engage in discussions with diverse partners about fourth-grade topics and texts. (SL.4.1)</p> <p>I can identify the reason a speaker provides to support a particular point. (SL.4.3)</p> <p>I can identify evidence a speaker provides to support particular points. (SL.4.3)</p>	
Supporting Learning Targets	Ongoing Assessment
<ul style="list-style-type: none">I can effectively participate in a Science Talk about simple machines.<ul style="list-style-type: none">I can prepare for the Science Talk by using evidence from the <i>Simple Machines</i> texts.I can build on others' ideas when responding to their statements and questions.I can ask questions on the topic being discussed.I can follow our class norms when I participate in a conversation.	<ul style="list-style-type: none">Simple Machines Science journals (pages 9 and 15)Science Talk Criteria checklist



Agenda	Teaching Notes
<ol style="list-style-type: none">Opening<ol style="list-style-type: none">Engaging Readers and Writers and Checking Homework (5 minutes)Vocabulary Review: Quiz-Quiz-Trade (10 minutes)Work Time<ol style="list-style-type: none">Science Talk: Reviewing Learning Targets (5 minutes)Science Talk: Reflecting and Setting Goals (5 minutes)Preparing Evidence and Questions for the Science Talk (10 minutes)Conducting the Science Talk (20 minutes)Closing and Assessment<ol style="list-style-type: none">Debrief (5 minutes)Homework<ol style="list-style-type: none">Continue reading in your independent reading book for this unit at home.	<ul style="list-style-type: none">This lesson is similar to Unit 1, Lesson 3. In this lesson, students will participate in another Science Talk. This time, they will be asked to refer to more notes and texts in order to gather evidence to support their thinking during the talk than they did in Unit 1.Students will need specific feedback from their previous Science Talk (Unit 1, Lesson 3). Write feedback on the bottom section of page 9 in students' Simple Machines Science journals. Focus the feedback on the learning target emphasized in that lesson: "I can prepare for the Science Talk by gathering evidence from scientific texts about simple machines." Also give suggestions to any students who may need more coaching to follow the class norms. Keep feedback focused, brief, and encouraging. For example, say: "I noticed that you recorded three pieces of evidence from the text on your form. Great! During the next science talk, be sure to mention the text during the class discussion," or "I noticed you were able to use evidence from the text when sharing your ideas during the Science Talk. Good work! One thing you should focus on for our next Science Talk is waiting for your turn to speak."Review: Quiz-Quiz-Trade (in Vocabulary Strategies) and Science Talk protocol (see Appendix).Post: Learning targets.



Lesson Vocabulary	Materials
force, effort, work, effectively, simple machine, inclined plane, lever, participate, evidence, norms	<ul style="list-style-type: none">• Sticky notes• Levers anchor chart (created in Lesson 5)• Simple Machines Science journals (pages 9 and 15)• Vocabulary word cards (for teacher use; one card per student for Quiz-Quiz Trade)• Equity sticks• Science Talk Norms anchor chart (created in Unit 1, Lesson 3)• <i>Simple Machines: Forces in Action</i> pages 6–7 and 24–25 (book; one per student)• Participating in a Science Talk anchor chart (created in Unit 1, Lesson 3)• Science Talk Criteria checklist (for teacher reference)

Opening	Meeting Students' Needs
<p>A. Engaging Readers and Writers and Checking Homework (5 minutes)</p> <ul style="list-style-type: none">• Remind students of their homework: “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.”• Invite students to get into triads to share and record examples of levers they found—one per sticky note. Then ask a representative from each triad to post their sticky notes on the bottom section of the class Levers anchor chart (from Lesson 5).• Ask the class what they noticed about levers around them. Invite students to turn and talk to their triad groups. Listen for comments such as: “In our tool box at home I saw a lot of tools—a hammer, screw driver, wrench—that could be levers,” or “Now that I know what a lever is, I see them all over the place,” or “Lots of people use levers and probably don’t even know it.”	



Opening (continued)	Meeting Students' Needs
<p>B. Vocabulary Review: Quiz-Quiz Trade (10 minutes)</p> <ul style="list-style-type: none">• Tell students today they will have another Science Talk about the question: “How do simple machines affect our lives?” Explain that now they have read and experimented with inclined planes and levers, they should have new thoughts or ideas related to this question. Explain that today they will prepare for their Science Talk by reviewing the vocabulary that they have collected related to simple machines. Remind students they have been recording vocabulary words into their Simple Machine Science journals and that the class has also been building a Word Wall with these terms.• Explain you would like them to do a short activity called Quiz-Quiz-Trade to help build their understanding of these words. Post the following directions for Quiz-Quiz-Trade:<ol style="list-style-type: none">1. Find a partner.2. Read definition—read your word’s definition to your partner. Allow him or her to guess the word or ask for a hint.3. Give a hint—if your partner needs a hint, say one thing that helps you remember the meaning of this word. Allow your partner to guess and share your word.4. Switch—have your partner read his or her definition and let you guess or receive a hint.5. Trade cards and find a new partner. Repeat Steps 2 through 5.• Ask students to read directions and clarify or model process if necessary. Distribute Vocabulary word cards.• Give students 8 minutes to quiz and trade.• Collect the Vocabulary word cards (which will be used in a different way in Lesson 7).	<ul style="list-style-type: none">• Consider supporting ELL students by providing individual copies of sentence frames for use during Science Talk.



Work Time	Meeting Students' Needs
<p>A. Science Talk: Reviewing Learning Targets (5 minutes)</p> <ul style="list-style-type: none"> Share the general learning target for the Science Talk: "I can effectively participate in a Science Talk about simple machines." Remind students that they have discussed the meaning of this learning target the last time the class held a Science Talk (in Unit 1). Ask them to turn to a partner and explain this target in their own words. Use equity sticks to cold call a few students to share their explanations. Based on their previous experience with Science Talks, they should share information about the purpose, process, and norms the class discussed in Unit 1, Lesson 3. They may refer to the Science Talk Norms anchor chart (Unit 1, Lesson 3). Tell students to help them "effectively participate," they will focus on the following specific learning targets: <ol style="list-style-type: none"> "I can prepare for the Science Talk by using evidence from the <i>Simple Machines</i> texts." "I can build on others' ideas when responding to their statements and questions." "I can ask questions on the topic being discussed." "I can follow our class norms when I participate in a conversation." Remind students of the first target: "I can prepare for the Science Talk by using evidence from the <i>Simple Machines</i> texts." Tell students this target should be familiar to them. Briefly review with students why it is important for scientists to base their discussions on evidence. Next, focus on the following learning targets: "I can build on others' ideas when responding to their statements and questions" and "I can ask questions about the topic being discussed." Have students Think-Pair-Share about what they think is important in these targets. Explain to students that good discussions help you to think about topics in a new way. To help them expand their understanding about simple machines, they need to ask questions and build on one another's ideas about how simple machines affect peoples' lives. Next to these targets, write a few sentence stems to help students during the upcoming discussion. For example: <ul style="list-style-type: none"> – "I wonder if _____? I wonder why _____?" and "I agree and I also think _____." – "I disagree because _____," and "That's a good question. I think _____." 	<ul style="list-style-type: none"> To further support students with goal setting, consider giving them a sentence starter, such as: "My goal for today's Science Talk is to _____." Consider printing out these sentence frames for ELL students to use in preparation for the discussion.



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none">Finally, point out the last learning target: "I can follow our class norms when I participate in a conversation." Remind students that a Science Talk is a discussion about big or important questions scientists have. While scientists discuss these big questions with one another, it is important for them to create a set of rules, or norms, that they will all follow so that everyone's ideas can be heard and considered. Tell students they will reflect on the norms they created during their last Science Talk, and set some goals for today.	
<p>B. Science Talk: Reflecting and Setting Goals (5 minutes)</p> <ul style="list-style-type: none">Post the Science Talk Norms anchor chart and review as a class. Ask each student to turn to a partner and point out one norm the class might need to focus on after their last Science Talk. Have pairs share and discuss or clarify norms as necessary.Return students' Simple Machines Science journals (page 9 with teacher feedback from Unit 1, Lesson 3). Ask students to review the feedback and do their own reflection. Then ask students to write a goal for themselves (based on teacher feedback, the norms, or today's learning targets) in the last section on page 9 of their journals.	



Work Time (continued)	Meeting Students' Needs
<p>C. Preparing Evidence and Questions for the Science Talk (10 minutes)</p> <ul style="list-style-type: none"> • Post and ask the Science Talk question (same as from Unit 1, Lesson 3): “How do simple machines affect our lives?” • Have students look over the evidence they recorded during the last Science Talk on page 9 of their Simple Machines Science journal. Explain they have learned quite a bit more about simple machines. Ask students to Think-Pair-Share: “What is something new you now know about simple machines that you might want to mention in today’s Science Talk?” • Tell students they will now have time to consider their new thinking on this question and what evidence they need to gather from the text and their notes. Be sure students have access to their text: <i>Simple Machines: Forces in Action</i> pages 6–7 and 24–25. Ask students to turn to page 15 in their Simple Machines Science journal to the Preparing for a Science Talk recording form. Tell students you would like them to now consider their new thinking on this question and what evidence they will need to gather from the text. Review the recording form briefly if needed. • Direct students to reread pages 6–7 and 24–25, and gather new evidence on page 15 in their journals. • Give students 8 minutes to reread and gather evidence for the Science Talk. Circulate to confer as necessary, and remind students to use specific evidence from text to support their thinking. 	<ul style="list-style-type: none"> • Allow ELLs and other students to use pictures and symbols as necessary on their recording forms. • To further support students, consider allowing some students to talk with a partner or write down what they would like to share during the Science Talk in advance. • For students who need an extension, consider having them reread the experiments conducted on pages 8–9 and pages 26–27 and then gather evidence from these sections of the text.
<p>D. Conducting the Science Talk (20 minutes)</p> <ul style="list-style-type: none"> • Gather students whole group in a circle. Remind them to bring their journals. Display the Science Talk protocol for the class to see. Briefly review the Participating in a Science Talk anchor chart (from Unit 1, Lesson 3) with students, and answer any questions. • Direct students to begin the Science Talk. Use the Science Talk Criteria checklist (started in Unit 1, Lesson 3) or begin a new one with the new blank form in this lesson’s supporting materials to monitor student progression toward the learning targets. Quickly redirect and support students as needed, but avoid leading the conversation. Remind students that their questions and comments should be directed to one another, not the teacher. 	



Closing and Assessment	Meeting Students' Needs
<p>A. Debrief (5 minutes)</p> <ul style="list-style-type: none">• Ask students to return to their seats. Invite them to reread the goals they wrote on the bottom of page 9 in their Simple Machines Science journals. Have them reflect on the following questions with a partner: “What progress did you make on your Science Talk goal today? What can you continue to work on?” Encourage students to base their discussion on their written goals and this lesson’s learning targets. Listen for students to state their goals and reference the learning targets as they share.• Collect students’ Simple Machines Science journals. Use page 15 and the Science Talk Criteria checklist to assess individual student progress towards SL.4.1.• Inform students they will get to demonstrate their knowledge about simple machines and their abilities to read and write like scientists on an assessment during the next two lessons. Tell them they will use their skills as scientific readers and writers in a similar way as they did when they researched inclined planes and levers, but this time, they will read about a simple machine the class hasn’t talked much about. Build students up regarding this opportunity to “show what you know.”	<ul style="list-style-type: none">• Some students may need to reflect verbally with a partner before writing.
Homework	Meeting Students' Needs
<ul style="list-style-type: none">• Continue reading in your independent reading book for this unit at home.	<ul style="list-style-type: none">•



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Supporting Materials



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Vocabulary Word Cards (Front)

Directions for teacher: Type in six additional words and definitions that your class has recorded on the Word Wall or in the Vocabulary section of the Simple Machines Research journal into the following template and make enough copies so that each student will have a card (most likely two or more sets).

Words	
force	
effort	
work	
simple machine	
inclined plane	
lever	



Vocabulary Word Cards (Back)

Directions for teacher: Type in six additional words and definitions that your class has recorded on the Word Wall or in the Vocabulary section of the Simple Machines Research journal into the following template and make enough copies so that each student will have a card (most likely two sets).

Words	
force: physical quantity that denotes ability to push, pull, or twist	
effort: force needed to use a simple machine	
work: measure of energy used to move an object	
simple machine: machine with few or no moving parts that lets people use less effort to move something	
inclined plane: simple machine with a slanted surface used to raise or lower objects	
lever: simple machine that consists of a bar pivoting from a fulcrum	



Science Talk Criteria Checklist

Learning Targets:

I can effectively participate in a Science Talk about simple machines.

I can follow our class norms when I participate in a conversation.

I can prepare for the conversation by using evidence from simple machine texts.

I can ask questions so I am clear about what is being discussed.

I can ask questions on the topic being discussed.

Student name	Norms	Prepare with evidence	Ask questions to clarify understanding	Connect questions to what others say	Teacher comments



Science Talk Criteria Checklist

Student name	Norms	Prepare with evidence	Ask questions to clarify understanding	Connect questions to what others say	Teacher comments