



EXPEDITIONARY
LEARNING

Grade 4: Module 3A: Unit 2: Lesson 11

Science Talk: Synthesizing What We Know about Simple Machines



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

I can effectively engage in discussions with diverse partners about fourth-grade topics and texts. (SL.4.1)

I can identify the reason a speaker provides to support a particular point. (SL.4.3)

I can identify evidence a speaker provides to support particular points. (SL.4.3)

Supporting Learning Targets

- I can effectively participate in a Science Talk about simple machines.
 - a. I can prepare for the Science Talk by using evidence from the *Simple Machines* texts.
 - b. I can build on others' ideas when responding to their statements and questions.
 - c. I can ask questions on the topic being discussed.
 - d. I can follow our class norms when I participate in a conversation.

Ongoing Assessment

- Simple Machines Science journals (page 20: Preparing for a Science Talk)
- Science Talk Criteria checklist



Agenda	Teaching Notes
<ol style="list-style-type: none">1. Opening<ol style="list-style-type: none">A. Vocabulary Review: Quiz-Quiz-Trade (10 minutes)B. Science Talks: Reviewing Learning Targets (5 minutes)2. Work Time<ol style="list-style-type: none">A. Science Talks: Reflecting and Setting Goals (10 minutes)B. Preparing Evidence and Questions for the Science Talk (10 minutes)C. Conducting the Science Talk (20 minutes)3. Closing and Assessment<ol style="list-style-type: none">A. Debrief (5 minutes)4. Homework<ol style="list-style-type: none">A. Share with someone at home what you are learning about simple machines and how they help us in our everyday lives.	<ul style="list-style-type: none">• This lesson follows the same structure as Lesson 6. Students have now built significant background knowledge about simple machines and how they affect force, effort, and work.• Since their last Science Talk in Lesson 6, students have researched the pulley and wheel and axle. In this Science Talk, students should be pushed to synthesize their learning about simple machines and support their thinking with additional evidence from pages 30–31 and 38–39 of the text <i>Simple Machines: Forces in Action</i> by Buffy Silverman.• Students will need specific feedback from their previous Science Talk (Lesson 6). Write feedback on the bottom section of page 15 in students' Simple Machines Science journals. Focus the feedback on the learning targets that were emphasized in that lesson: "I can prepare for the Science Talk by using evidence from scientific texts," "I can ask questions about the topic being discussed," and "I can build on other's ideas when responding to their statements and questions."• Review: Quiz-Quiz-Trade (in Vocabulary Strategies) and Science Talk protocols (see Appendix).• Post: Learning targets.



Lesson Vocabulary	Materials
increase, decrease, distance, pulley, wheel and axle, screw, participate, evidence, norms (review from previous lessons)	<ul style="list-style-type: none">• 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)• Simple Machines Science journals (one per student)• <i>Simple Machines: Forces in Action</i> pages 6–7 and 24–25 (book; one per student)• Preparing for a Science Talk recording form (in Simple Machines Science journals)• Participating in a Science Talk anchor chart (from Unit 1, Lesson 3)• Science Talk Criteria checklist



Opening	Meeting Students' Needs
<p>A. Vocabulary Review: Quiz-Quiz-Trade (10 minutes)</p> <ul style="list-style-type: none">• Tell students that to prepare for their Science Talk they will review vocabulary related to simple machines in another round of Quiz-Quiz-Trade. Explain to students that you have added words to the Vocabulary word cards based on the words they collected since studying the pulley and wheel and axle.• Post and review 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 10 minutes to quiz and trade.• Collect the Vocabulary word cards (which will be used again in Lesson 12 for another round of Interactive Word Wall).	



Opening (continued)	Meeting Students' Needs
<p>B. Science Talks: Reviewing Learning Targets (5 minutes)</p> <ul style="list-style-type: none">• Begin by sharing just 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 this learning target at the last Science Talk (in Lesson 6). 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. Listen for students to share information preparing for the Science Talk by gathering evidence, asking questions, building on other’s ideas, and following the norms. As students mention each of these, post the corresponding learning targets and discuss and clarify:<ul style="list-style-type: none">a. I can follow our class norms when I participate in a conversation.b. I can prepare for the conversation by using evidence from simple machine texts.c. I can ask questions so I am clear about what is being discussed.d. I can ask questions on the topic being discussed.• Tell students that in today’s Science Talk they should strive to meet each of these learning targets. Tell them they will get to see feedback on these targets from their last Science Talk, which will help them figure out what to focus on today.	<ul style="list-style-type: none">• Consider supporting ELL students by providing individual copies of sentence frames for use during the Science Talk.• To provide further support to students during the Science Talk, consider posting or printing out sentence stems to help students during the discussion. For example: “I wonder if _____? I wonder why _____?” and “I agree and I also think _____. I disagree because _____” and “That’s a good question. I think _____.”



Work Time	Meeting Students' Needs
<p>A. Science Talks: Reflecting and Setting Goals (10 minutes)</p> <ul style="list-style-type: none">• Post the Science Talk Norms anchor chart and review as a class. Ask students to turn to a partner and point out one norm they think the class will 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 and have them turn to page 15 with teacher feedback from Lesson 6. Ask students to review the goals they set during the last Science Talk. Post the following directions for students to reflect and set goals:<ol style="list-style-type: none">1. Review your previous goal (and the feedback).2. Reflect on whether or not you met your goal. Base this on the feedback you received.3. Turn to a partner and share your goal and if you think you met the goal or are still making progress.4. Write a revised goal for this Science Talk on page 20 in your Simple Machines Science journal.• Give students 5 minutes to discuss and revise their goals. Confer with pairs who may need extra support reflecting and setting goals.	



Work Time (continued)	Meeting Students' Needs
<p>B. Preparing Evidence and Questions for the Science Talk (10 minutes)</p> <ul style="list-style-type: none">• Post the Science Talk question (same as from Unit 1, Lesson 3, and Unit 2, Lesson 6): “How do simple machines affect our lives?”• Explain that students have learned quite a bit more about simple machines. Have students look over the evidence they recorded during the last Science Talk. 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: Simple Machines: Forces in Action pages 6–7 and 24–25 and have them turn to page 20 in their Simple Machines Science journal to the next Preparing for a Science Talk recording form.• Give students 10 minutes to prepare their evidence. Circulate to confer as needed. Commend students who are using specific evidence; remind students how important it is to have evidence 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.• Consider supporting students to extend their thinking by also rereading the experiments conducted on pages 8–9 and 26–27.
<p>C. 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 Simple Machines Science journal. Display the Science Talk protocol for students to see. Briefly review the Participating in a Science Talk anchor chart with students, and answer any clarifying questions.• Direct students to begin the Science Talk. Use the Science Talk Criteria checklist to monitor student progression toward the learning targets. Quickly redirect and support students as needed, but avoid leading the conversation. Remind students their questions and comments should be directed to one another, not the teacher.	<ul style="list-style-type: none">• Consider allowing some students to talk with a partner or write what they would like to share during the Science Talk in advance.



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 goal they wrote on the back of their recording form. Have them reflect on their goal and write their thoughts on the reflection section of page 20 in their Simple Machines Science journal.• Inform students they can demonstrate their knowledge about simple machines and their abilities to read and write like scientists in an assessment during the next two lessons. Tell them that they will use their skills as scientific readers and writers like when they researched inclined planes, levers, pulleys, and wheels and axles, but this time, they will read about another 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">• Share with someone at home what you are learning about simple machines and how they help us in our everyday lives. <p><i>Note: In Lessons 12 and 13, students will complete an on-demand assessment based on reading about wedges in pages 12–15 from Simple Machines: Forces in Action. This is a two-part assessment. In Part 1, students will read and answer questions about wedges and how they help do work. In Part 2, students will read, conduct an experiment, and write about their findings.</i></p> <p><i>To prepare for Part 2 of the assessment (which takes place in Lesson 13), gather the experiment materials listed on page 14 of Simple Machines: Forces in Action.</i></p>	



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Supporting Materials



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Vocabulary Word Cards (Front)

Directions for teacher: These word cards should be added to the word cards from Lesson 6 of this unit. Be sure to type in any additional words your class may have added to the Word Wall or their vocabulary lists.

Words	
increase	
decrease	
distance	
pulley	
wheel and axle	
screw	



Vocabulary Word Cards (Back)

Directions for teacher: These word cards should be added to the word cards from Lesson 6 of this unit. Be sure to type in any additional words your class may have added to the Word Wall or their vocabulary lists.

Definitions	
increase: make greater	
decrease: make less	
distance: the measure of space between two points	
pulley: simple machine made of a wheel with a rope or chain wrapped around it and used to lift objects	
wheel and axle: simple machine with a large wheel connected to a central shaft that moves together	
screw: simple machine made of an inclined plane wrapped around a shaft	



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