FOSS and Common Core ELA — Grade 2

Contents

INTRODUCTION

Each FOSS investigation follows a similar design to provide multiple exposures to science concepts. The design includes these pedagogies.

- Active investigation, including outdoor experiences
- Writing in science notebooks to answer focus questions
- Reading in *FOSS Science Resources*
- Assessment to monitor progress and motivate student reflection on learning

In practice, these components are seamlessly integrated into a continuum designed to maximize every student's opportunity to learn. An instructional sequence may move from one pedagogy to another and back again to ensure adequate coverage of a concept.

The FOSS instructional design recognizes the important role of language in science learning. Throughout the pedagogical design elements, students engage in the practices of the Common Core State Standards (CCSS) for English Language Arts (ELA). The purpose of this chapter is to provide the big picture of how FOSS provides opportunities for the development and exercising of these practices through science. On the following pages, there is a chart that identifies the opportunities for second grade and where the relevant opportunities are found within the three FOSS modules.

Guiding Principles

When integrating language-arts instruction with FOSS, keep in mind these guiding principles:

- FOSS investigations follow a clear and coherent conceptual flow and a consistent instructional design. Students develop science knowledge by building a framework of concepts and supporting ideas.
- Common Core State Standards for ELA are introduced, developed, and practiced in the context of learning science content and engaging in the science and engineering practices. Students read and comprehend complex science texts related to their prior experience and knowledge. They write informational/explanatory texts, arguments to support claims, and narratives about experience in science. They engage in collaborative discussions about science and learn new vocabulary and language structures in context.
- The decision to use additional science texts, writing tasks, oral discourse opportunities, and vocabulary development activities is based on how well they address the science as well as the ELA standards.
- Instruction is differentiated to meet the needs of all students; the linguistic accommodations that are made for English learners support comprehensible input and accelerate academic language development. Language objectives for English learners in science instruction include the application of strategies that support construction of meaning from academic discussions and complex text, participation in productive discourse, and the ability to express ideas in writing clearly and coherently according to task, purpose, and audience.
- Formative assessment tools are used routinely to measure progress toward science understanding, use of science and engineering practices, and meeting literacy and language development goals. Assessment is viewed as a way to make student thinking visible and to determine next steps for instruction for both science and literacy. Instruction includes opportunities for students to assess themselves and peers.

Second grade is an exciting year as students increase independence in making meaning from texts read aloud and on their own. Their vocabularies increase and they are continuing to develop their communication skills. Second graders are expected to use the science and engineering practices to demonstrate their understanding of the core ideas. To accomplish this, students learn to find patterns and evidence in texts, describe how images support ideas, use text features to locate information, and communicate their ideas orally and in written form using models, drawings, and writing.

TEACHING NOTE

Adhering to these guiding principles optimizes instructional time and, most importantly, benefits student learning by providing authentic and relevant contexts for building content knowledge, applying meaning-making strategies, and developing language and literacy skills.

Instructional Flow

In almost all investigations, the instructional flow is the same and provides these opportunities for effective integration of ELA standards.

- When **setting the context** for the lesson, students activate prior knowledge through class or small-group discussions where they ask and answer questions to clarify comprehension, gather additional information, and deepen understanding (SL 3), or recount information. (SL 4).
- During the **active investigation**, students are expected to work with partners and in collaborative groups, and to engage in teacher-led discussions where they build on each other's ideas and ask for clarification and further explanation as needed. (SL 1).
- In the **data management** phase, students make observations, record, and organize data in their notebooks. (W 7) The notebook provides a space for students to recall information from experiences and to gather information to answer the focus question. (W 8) and to use words and phrases acquired through conversations and readings. (L 6).
- The **analysis** phase involves discussing data, constructing and writing explanations, and engaging in argumentation. Here students are making meaning by writing explanatory texts (W 2), writing opinion pieces supporting a point of view with reasons. (W 1), or participating in a shared research or writing project. (W 7).
- **Reading** articles in *FOSS Science Resources* and other recommended readings provides a plethora of opportunities to address all the third-grade reading standards for informational text.
- Lastly, the **assessment** tools and next-step strategies for engaging students in high-level critical thinking support the development of the CCSS capacities of the literate individual: demonstrate independence, build strong content knowledge, comprehend as well as critique, and value evidence.

Again, we have provided you with some examples of how FOSS connects to the second-grade ELA standards; there are many more opportunities waiting to be created and explored by you and your students.

TEACHING NOTE

Throughout the second-grade FOSS modules, opportunites for addressing the ELA standards have been noted; however, these examples should not be considered the only places for integrating literacy skills.

READING STANDARDS FOR INFORMATIONAL TEXT

	Standard	Solids and Liquids Module
Key Ideas and Details	1. Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details in a text.	Discuss articles in *FOSS Science Resources* Inv 1, Part 1, Step 18; Inv. 1, Part 2, Step 15; Inv 1, Part 4, Step 18; Inv 2, Part 3, Step 18 Inv 3, Part 4, Step 9; Inv 3, Part 5, Step 12 Inv 4, Part 2, Step 16; Inv 4, Part 4 Steps 21, 23
	2. Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.	Discuss and review articles in *FOSS Science Resources* Inv 3, Part 4, Steps 8-9; Inv 3, Part 5, Step 12 Inv 4, Part 2, Step 16; Inv 4, Part 4, Step 20
	3. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.	Discuss articles in *FOSS Science Resources* Inv 2, Part 3, Step 17; Inv 3, Part 4, Steps 8-9 Inv 4, Part 2, Step 15; Inv 4, Part 4, Steps 17, 23
Craft and Structure	4. Determine the meaning of words and phrases in a text relevant to a *grade 2 topic or subject area*.	All investigations provide opportunities for students to determine the meaning of new words and phrases while reading articles in *FOSS Science Resources.* Selected examples Inv 1, Part 4, Step 2, 17; Inv 4, Part 2, Step 15
	5. Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.	Read and discuss articles in *FOSS Science Resources* Inv 1, Part 1 Step 17; Inv 4, Part 2, Step 16
	6. Identify the main purpose of a text, including what the author wants to answer, explain, or describe.	Read and discuss articles in *FOSS Science Resources* Inv 1, Part 1 Step 17; Inv 1, Part 2, Step 15 Inv 2, Part 3, Step 17; Inv 3, Part 4, Step 9 Inv 4, Part 2, Step 16; Inv 4, Part 4, Step 20

Common Core State Standards for English Language Arts and Literacy in History/Social Studies Science and Technical Subjects (National Governors Association Center for Best Practices and Council of Chief State School Officers, 2010).

Insects and Plants Module	Pebbles, Sand, and Silt Module
Discuss articles in *FOSS Science Resources* Inv 1, Part 2, Step 20; Inv 2, Part 3, Steps 10-12 Inv 2, Part 4, Steps 18-19; Inv 3, Part 2, Step 21 Inv 4, Part 2, Step 19; Inv 4, Part 3, Steps 10-11 Inv 5, Part 3, Steps 15-16	Discuss articles in *FOSS Science Resources* Inv 1, Part 4, Step 16; Inv 1, Part 5, Step 6 Inv 2, Part 2, Step 9; Inv 2, Part 4, Step 26 Inv 3, Part 1, Step 12; Inv 3, Part 5, Step 12 Inv 4, Part 2, Steps 7-9, 24; Inv 4, Part 3, Steps 3, 8; Inv 4, Part 4, Steps 2-3, 5
Discuss and review articles in *FOSS Science Resources* Inv 1, Part 1, Step 19; Inv 2, Part 3, Step 9; Inv 2, Part 4, Step; Inv 3, Part 2, Step 20; Inv 4, Part 2, Step 19; Inv 4, Part 3, Step 9 Inv 5, Part 3 Step 14	Discuss and review articles in *FOSS Science Resources* Inv 1, Part 4, Step 15-16; Inv 2, Part 2, Steps 8-9; Inv 2, Part 4, Steps 22, 26; Inv 4, Part 2, Step 9; Inv 4, Part 3, Step 5; Inv 4, Part 4, Step 5
Discuss articles in *FOSS Science Resources* Inv 2, Part 3, Steps 9-10; Inv 4, Part 2, Step 19	Discuss articles in *FOSS Science Resources* Inv 2, Part 4, Steps 22, 26; Inv 3, Part 1, Step 11; Inv 3, Part 5, Step 13; Inv 4, Part 2, Step 8; Inv 4, Part 4, Steps 2-3
All investigations provide opportunities for students to determine the meaning of new words and phrases while reading articles in *FOSS Science Resources*. Selected examples Inv 2, Part 4, Step 17; Inv 5, Part 3, Step 4	All investigations provide opportunities for students to determine the meaning of new words and phrases while reading articles in *FOSS Science Resources*. Selected examples Inv 1, Part 4, Step 15; Inv 1, Part 5, Step 6; Inv 2, Part 2, Step 8; Inv 3, Part 5, Step 12; Inv 4, Part 3, Steps 2-3
Read and discuss articles in *FOSS Science Resources* Inv 1, Part 1, Step 18; Inv 2, Part 4, Step 17 Inv 5, Part 3, Step 15	Read and discuss articles in *FOSS Science Resources* Inv 1, Part 4, Step 15; Inv 2, Part 2, Step 8 Inv 3, Part 5, Step 12 Inv 4, Part 2, Step 8; Inv 4, Part 2, Step 8; Inv 4, Part 4, Steps 2, 5
Read and discuss articles in *FOSS Science Resources* Inv 1, Part 1, Step 19; Inv 2, Part 4, Step 19 Inv 3, Part 3, Step 21; Inv 5, Part 3, Step 16	Read and discuss articles in *FOSS Science Resources* Inv 1, Part 4, Step 15-16; Inv 2, Part 2, Step 8 Inv 4, Part 2, Step 9 Inv 4, Part 2, Steps 23-24

READING STANDARDS FOR INFORMATIONAL TEXT (CONT.)

	Standard	Solids and Liquids Module
Integration of Knowledge and Ideas	7. Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.	All investigations provide opportunities for students to explain how the photographs and diagrams help them understand the articles in *FOSS Science Resources.* Selected examples Inv 1, Part 1, Step 18; Inv 2, Part 3, Step 17 Inv 3, Part 5, Step 12; Inv 4, Part 2, Step 16
	8. Describe how reasons support specific points the author makes in a text.	Read and discuss articles in *FOSS Science Resources* Inv 1, Part 2, Step 15; Inv 2, Part 3, Step 17 Inv 4, Part 2, Step 16
	9. Compare and contrast the most important points presented by two texts on the same topic.	Students can read *FOSS Science Resources* as well as readings suggested on FOSSweb. Using these two texts allows students to compare and contrast important science ideas. Selected examples Inv 3, Part 5, Step 11 Inv 4, Language Extension. Describe oobleck
Range of Reading and Level of Text Complexity	10. By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.	All investigations provide opportunities for students to develop their ability to read and comprehend complex informational science text such as *FOSS Science Resources*.

Insects and Plants Module	Pebbles, Sand, and Silt Module
All investigations provide opportunities for students to explain how the photographs and diagrams help them understand the articles in *FOSS Science Resources.* Selected examples Inv 2, Part 3, Step 10; Inv 4, Part 3, Step 9 Inv 5, Part 3, Step 14	All investigations provide opportunities for students to explain how the photographs and diagrams help them understand the articles in *FOSS Science Resources.* Selected examples Inv 1, Part 4, Step 16; Inv 1, Part 5, Step 6 Inv 2, Part 2, Step 8; Inv 2, Part 4, Step 25 Inv 3, Part 1, Steps 11-12; Inv 4, Part 2, Step 7
Read and discuss articles in *FOSS Science Resources* Inv 2, Part 4, Step 18-19; Inv 3, Part 3, Step 21	Read and discuss articles in *FOSS Science Resources* Inv 1, Part 4, Step 16; Inv 2, Part 2, Step 8-9 Inv 3, Part 1, Steps 11-12; Inv 4, Part 2, Step 8
Students can read *FOSS Science Resources* as well as readings suggested on FOSSweb. Using these two texts, allows students to compare and contrast important science ideas. Selected examples Inv 1, Language extension. Read lifetimes Inv 4, Part 2, Step 19	Students can read *FOSS Science Resources* as well as readings suggested on FOSSweb. Using these two texts, allows students to compare and contrast important science ideas. Selected examples Inv 1, Part 4, Step 1, 16; Inv 1. Language extension. Make stone soup; Inv 1. Language extension. Read about special rocks; Inv 4, Part 4, Step 5
All investigations provide opportunities for students to develop their ability to read and comprehend complex informational science text such as *FOSS Science Resources*.	All investigations provide opportunities for students to develop their ability to read and comprehend complex informational science text such as *FOSS Science Resources*.

READING STANDARDS: FOUNDATIONAL SKILLS

	Standard	Solids and Liquids Module
Phonics and Word Recognition	3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Distinguish long and short vowels when reading regularly spelled one-syllable words. b. Know spelling-sound correspondences for additional common vowel teams. c. Decode regularly spelled two-syllable words with long vowels. d. Decode words with common prefixes and suffixes. e. Identify words with inconsistent but common spelling-sound correspondences. f. Recognize and read grade-appropriate irregularly spelled words.	All investigations provide opportunities for students to apply phonics and word analysis skills in decoding words while reading articles in *FOSS Science Resources*. Selected example Inv 4, Part 4, Step 20
Fluency	4. Read with sufficient accuracy and fluency to support comprehension. a. Read grade-level text with purpose and understanding. b. Read grade-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	All investigations provide opportunities for students to practice reading with accuracy and fluency. Selected examples Inv 1, Part 1 Step 17 Inv 2, Part 3, Step 17 Inv 4, Part 4, Step 20

Insects and Plants Module	Pebbles, Sand, and Silt Module
All investigations provide opportunities for students to apply phonics and word analysis skills in decoding words while reading articles in *FOSS Science Resources*. Selected example Inv 5, Part 3, Step 14	All investigations provide opportunities for students to apply phonics and word analysis skills in decoding words while reading articles in *FOSS Science Resources*. Selected example Inv 2, Part 4, Step 21
All investigations provide opportunities for students to practice reading with accuracy and fluency. Selected examples Inv 2, Part 3, Step 9; Inv 2, Part 4, Step 17 Inv 3, Part 2, Step 20 Inv 4, Part 2, Step 18; Inv 4, Part 3, Step 9 Inv 5, Part 3, Steps 14-15	All investigations provide opportunities for students to practice reading with accuracy and fluency. Selected examples Inv 1, Part 4, Step 15 Inv 2, Part 2, Step 8; Inv 2, Part 4, Steps 21, 26 Inv 3, Part 1, Step 11; Inv 3, Part 5, Step 12 Inv 4, Part 2, Step 7

WRITING STANDARDS

Text Types and Purposes

Standard	Solids and Liquids Module
1. Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., *because*, *and*, *also*) to connect opinion and reasons, and provide a concluding statement or section.	All investigations provide opportunities for students to write about a science topic, stating their opinion or claim, supported by reasons in answer to the focus questions and in the I-Check assessments. Selected examples Inv 1, Part 3, Step 10; Inv 1, Part 4, Step 13 Inv 2, Part 1, Step 12 Inv 3, Part 1, Step 15 Inv 4, Part 3, Step 11
2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.	All investigations provide opportunities for students to write explanatory texts to examine the science topic they are learning. Students write an explanation as part of their answer to the focus question in the I-Check assessments, and in response to the readings. Selected examples Inv 1, Language extension. Make "My Book of Solids" Inv 2, Part 3, Step 15 Inv 3, Part 4, Steps 8-9; Inv 3, Part 4, Step 5 Inv 4, Part 5, Step 9
3. Write narratives in which they recount a well elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.	All investigations provide opportunities for students to write narratives. Students describe their observations and experiences with the science ideas they are exploring. Selected examples Inv 2, Part 4, Step 15 Inv 3, Part 3, Step 11 Inv 4, Part 1, Step 26

Insects and Plants Module	Pebbles, Sand, and Silt Module
All investigations provide opportunities for students to write about a science topic, stating their opinion or claim, supported by reasons in answer to the focus questions and in the I-Check assessments. Selected examples Inv 1, Part 1, Step 16 Inv 2, Part 4, Steps 16, 21 Inv 3, Part 2, Steps 8, 17 Inv 4, Part 1, Step 16; Inv 4, Part 4, Step 15	All investigations provide opportunities for students to write about a science topic, stating their opinion or claim, supported by reasons in answer to the focus questions and in the I-Check assessments. Selected examples Inv 2, Part 3, Step 16 Inv 3, Part 5, Step 8
All investigations provide opportunities for students to write explanatory texts to examine the science topic they are learning. Students write an explanation as part of their answer to the focus question in the I-Check assessments, and in response to the readings. Selected examples Inv 2, Part 1, Step 11; Inv 2, Part 2, Step 13 Inv 3, Part 4, Step 19 Inv 4, Part 2, Step 16; Inv 4, Part 3, Step 6 Inv 5, Part 2, Step 4	All investigations provide opportunities for students to write explanatory texts to examine the science topic they are learning. Students write an explanation as part of their answer to the focus question in the I-Check assessments, and in response to the readings. Selected examples Inv 1, Part 1, Step 12; Inv 1, Part 3, Step 11 Inv 2, Part 1, Step 19; Inv 2, Part 2, Steps 10, 11; Inv 2, Part 3, Step 16 Inv 3, Part 5, Step 2 Inv 4, Language extension. Look for rocks everywhere Inv 5, Part 4, Step 4; Inv 5, Language extension. Draw soil profiles
All investigations provide opportunities for students to write narratives. Students describe their observations and experiences with the science ideas they are exploring. Selected examples Inv 1, Part 2, Steps 5, 8, 12 Inv 2, Part 2, Steps 5, 8, 11-13; Inv 2, Part 4, Step 21 Inv 3, Part 1, Step 8; Inv 3, Part 2, Step 17; Inv 3, Part 3, Steps 1-3, 6; Inv 3, Part 4, Step 9; Inv 3, Language extension. Invent an Insect Inv 4, Part 3, Step 6 Inv 5, Part 1, Step 13; Inv 5, Part 4, Step 17	All investigations provide opportunities for students to write narratives. Students describe their observations and experiences with the science ideas they are exploring. Selected examples Inv 1, Language extension. Make a rock record book Inv 1, Language extension. Set up a rock store Inv 1, Language extension. Write about magic pebbles Inv 2, Part 2, Step 11 Inv 2, Language extension. Write the journey of your rock Inv 2, Language extension. Write rock stories Inv 3, Part 5, Step 11 Inv 4, Language extension. Make tracks and molds Inv 5, Language extension. Write directions for making soil

WRITING STANDARDS

	Standard	Solids and Liquids Module
Production and Distribution of Writing	5. With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.	The Wrap-Up/Warm-Up section of each investigation part, provides the opportunity for students to strengthen their notebook entries by revising and adding in new information. The next step strategies after taking the I-Check also serve as a method for strengthening writing. Selected examples Inv 1, Part 1, Step 20; Inv 2, Part 1, Step 13; Inv 2, Part 3, Step 11; Inv 3, Part 2, Step 13
	6. With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.	
	7. Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).	In every investigation students record their observations in their notebooks. They also write about articles in *FOSS Science Resources*. Selected examples: Inv 1, Part 1, Step 13; Inv 1, Part 2, Step 10; Inv 1, Part 3, Step 10; Inv 1, Part 4, Step 13; Inv 1, Part 5, Step 8; Inv 2, Part 3, Step 6 Inv 3, Part 1, Step 10; Inv 3, Part 5, Step 10 Inv 4, Part 1; Step 7, 13, 22; Inv 4, Part 2, Step 7; Inv 4, Part 3, Steps 5-9, 11; Inv 4, Part 5, Step 9
Research to Build and Present Knowledge	8. Recall information from experiences or gather information from provided sources to answer a question.	All investigations provide students with the opportunity to write about their science experiences and record their observations in their science notebooks. Students also take notes and organize information when reading articles in *FOSS Science Resources*. Selected examples Inv 1, Part 1 Steps 13, 17; Inv 1, Part 2, Steps 10-11, 15; Inv 1, Part 3, Step 10; Inv 1, Part 4, Step 13 Inv 2, Part 1, Step 12; Inv 2, Part 2, Step 17; Inv 2, Part 3, Step 15; Inv 2, Part 4, Step 15 Inv 3, Part 3, Step 11, 12; Inv 3, Part 4, Step 5 Inv 4, Part 1, Step 25; Inv 4, Part 2, Step 7; Inv 4, Part 3, Step 11; Inv 4, Part 4, Step 18

Insects and Plants Module	Pebbles, Sand, and Silt Module
The Wrap-Up/Warm-Up section of each investigation part, provides the opportunity for students to strengthen their notebook entries by revising and adding in new information. The next-step strategies after taking the I-Check also serve as a method for strengthening writing. Selected examples Inv 1, Part 2, Step 17; Inv 3, Part 1, Step 10; Inv 4, Part 1, Step 18; Inv 4, Part 2, Step 20; Inv 5, Part 2, Step 6	The Wrap-Up/Warm-Up section of each investigation part, provides the opportunity for students to strengthen their notebook entries by revising and adding in new information. The next-step strategies after taking the I-Check also serve as a method for strengthening writing. Selected example Inv 1, Part 4, Step 17
In every investigation students record their observations in their notebooks They also write about articles in *FOSS Science Resources*. Selected examples Inv 1, Part 1, Step 13; Inv 1, Part 2, Steps 4, 7, 8, 10, 14; Inv 1, Part 3, Step 9, 10; Inv 1, Language extension. Search for insects Inv 2, Part 1, Steps 17, 18; Inv 2, Part 2, Step 1, 3-5, 7-8, 12-13; Inv 3, Part 1, Step 7; Inv 3, Part 2, Step 15; Inv 3, Part 3, Step 2, 3, 6, 9; Inv 3, Part 4, Steps 14-16 Inv 4, Part 1, Steps 6, 16; Inv 4, Part 2, Steps 7, 9; Inv 4, Part 3, Steps 2, 8; Inv 5, Part 1, Steps 6, 8, 11, 12	In every investigation students record their observations in their notebooks They also write about articles in *FOSS Science Resources*. Selected examples Inv 1, Part 5, Step 7 Inv 2, Part 3, Steps 11, 13 Inv 3, Part 1, Steps 3, 4, 7 Inv 5, Part 1, Step 21; Inv 5, Part 2, Steps 17-18; Inv 5, Language extension. Compare soil habitats
All investigations provide students with the opportunity to write about their science experiences and record their observations in their science notebooks. Students also take notes and organize information when reading articles in *FOSS Science Resources*. Selected examples Inv 1, Part 1, Step 16, 18; Inv 1, Part 2, Step 2; Inv 1, Part 3, Step 9; Inv 2, Part 1, Steps 11, 12; Inv 2, Part 2, Step 13; Inv 2, Part 4, Step 16; Inv 3, Part 1, Step 8; Inv 3, Part 2, Step 17; Inv 3, Part 3, Step 1, 6, 11; Inv 3, Part 4, Step 19; Inv 4, Part 1, Step 16; Inv 4, Part 2, Step 16; Inv 4, Part 3, Step 6; Inv 4, Part 4, Step 15 Inv 5, Part 1, Step 13; Inv 5, Part 2, Step 4; Inv 5, Part 3, Step 12; Inv 5, Part 4, Step 17	All investigations provide students with the opportunity to write about their science experiences and record their observations in their science notebooks. Students also take notes and organize information when reading articles in *FOSS Science Resources*. Selected examples Inv 1, Part 1, Step 12; Inv 1, Part 2, Step 11; Inv 1, Part 3, Step 11; Inv 1, Part 4, Step 11 Inv 2, Part 1, Step 19; Inv 2, Part 2, Step 7; Inv 2, Part 3, Step 16 Inv 2, Part 4, Steps 15, 22 Inv 3, Part 1, Step 9, 13; Inv 3, Part 3, Step 11; Inv 3, Part 4, Step 8, 10; Inv 3, Part 5, Step 11 Inv 5, Part 1, Step 24; Inv 5, Part 2, Step 19

SPEAKING AND LISTENING STANDARDS

Comprehension and Collaboration

Standard	Solids and Liquids Module
1. Participate in collaborative conversations with diverse partners about *grade 2 topics and texts* with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by linking their comments to the remarks of others. c. Ask for clarification and further explanation as needed about the topics and texts under discussion.	All investigations provide students ample opportunities to engage in collaborative discussions. Students discuss before, during, and after the active investigation, when reading articles in the *FOSS Science Resources*, and during the Wrap-Up/Warm-Up section. Selected examples Inv 1, Part 2, Step 2, 8; Inv. 1, Part 3, Step 14; Inv 1, Part 4, Steps 6, 15, 18; Inv 1, Part 5, Step 16; Inv 2, Part 1, Step 13; Inv 2, Part 2, Steps 7, 19; Inv 2, Part 3, Step 17; Inv 3, Part 1, Step 12, 17; Inv 3, Part 3, Step 11; Inv 3, Part 4, Step 10; Inv 4, Part 3, Steps 9-13; Inv 4, Part 4, Steps 17, 20, 26
2. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.	All investigations provide opportunities for students to recount or descibe ideas and details from the investigtions and from reading the articles in *FOSS Science Resources*. This module also includes video discussions. Selected examples Inv 1, Part 2, Step 16, 17; Inv 1, Part 3, Step 1; Inv 1, Part 4, Steps 11, 15, 24; Inv 2, Part 2, Step 20; Inv 2, Part 3, Step 17; Inv 3, Part 2, Step 2; Inv 3, Part 5, Steps 11-12; Inv 4, Part 1, Steps 1, 19; Inv 4, Part 2, Steps 9, 16; Inv 4, Part 4, Step 25
3. Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.	All investigations provide students with the opportunity to ask and answer questions about how they answered the focus question during the Wrap-Up/Warm-Up section. Other opportunities arise when students present information to their group or the whole class. Selected examples Inv 1, Part 1, Step 20; Inv 1, Part 4, Step 20 Inv 2, Part 1, Step 6; Inv 2, Part 3, Steps 9, 17; Inv 2, Part 4, Steps 6, 10, 11, 13 Inv 3, Part 2, Step 7, 13; Inv 3, Part 3, Steps 7, 10; Inv 3, Part 4, Step 4; Inv 3, Part 5, Steps 7-8 Inv 4, Part 1; Steps 9, 11, 12, 14; Inv 4, Part 3, Step 1 Inv 4, Part 4, Steps 1,2, 6, 8-10, 15 Inv 4, Part 5, Steps 1-3, 6

Insects and Plants Module	Pebbles, Sand, and Silt Module
All investigations provide students ample opportunities to engage in collaborative discussions. Students discuss before, during, and after the active investigation, when reading articles in the *FOSS Science Resources*, and during the Wrap-Up/Warm-Up section. Selected examples Inv 1, Part 1, Steps 18, 21 Inv 2, Part 2, Step 10, 11 Inv 3, Part 2, Step 21; Inv 3, Part 4, Step 17 Inv 4, Part 1, Step 18; Inv 4, Part 2, Steps 19-20 Inv 5, Part 2, Step 6	All investigations provide students ample opportunities to engage in collaborative discussions. Students discuss before, during, and after the active investigation, when reading articles in the Student Resources, and during the Wrap-Up/ Warm-Up section. Selected examples Inv 1, Part 4, Step 17; Inv 1, Part 5, Step 3; Inv 2, Part 1, Step 21 Inv 3, Part 2, Step 10, 15; Inv 3, Part 3, Step 12; Inv 3, Part 4, Step 12; Inv 4, Part 4, Steps 2-3; Inv 5, Part 1, Step 26; Inv 5, Part 2, Step 25; Inv 5, Part 3, Steps 4, 5, 10
All investigations provide opportunities for students to recount or descibe ideas and details from the investigtions and from reading the articles in *FOSS Science Resources*. This module also includes video discussions. Selected examples Inv 1, Part 1, Steps 18, 19, 22 Inv 2, Part 1, Steps 10, 19; Inv 2, Part 2, Steps 10-11, 14; Inv 2, Part 4, Step 20 Inv 3, Part 1, Step 10; Inv 3, Part 2, Step 1 Inv 4, Part 2, Step 19; Inv 5, Part 4, Steps 2,3	All investigations provide opportunities for students to recount or descibe ideas and details from the investigtions and from reading the articles in *FOSS Science Resources*. This module also includes video discussions. Selected examples Inv 1, Part 1, Step 15; Inv 1, Part 2, Step 15; Inv 1, Part 3, Steps 1, 10, 17; Inv 1, Part 5, Step 1 Inv 2, Part 2, Step 8; Inv 2, Part 4, Steps 22, 23 Inv 4, Part 3, Step 4 Inv 5, Part 1, Step 10; Inv 5, Part 2, Step 23
All investigations provide students with the opportunity to ask and answer questions about how they answered the focus question during the Wrap-Up/Warm-Up section. Other opportunities arise when students present information to their group or the whole class. Selected examples Inv 1, Part 1, Steps 1, 3, 6, 7; Inv 1, Part 2, Steps 2, 5, 7, 11, 12, 15-17; Inv 1, Part 3, Steps 1, 5, 7; Inv 2, Part 1, Step 1; Inv 2, Part 2, Steps 1-4, 6, 7, 9-14, 16; Inv 2, Part 3, Step 3; Inv 2, Part 4, Steps 2, 13, 17-21; Inv 3, Part 1, Steps 3, 10; Inv 3, Part 2, Steps 1, 4, 13, 22 Inv 3, Part 3, Step 2; Inv 3, Part 4, Steps 2, 9, 12; Inv 4, Part 1, Steps 3, 7, 9, 12, Inv 4, Part 2, Steps 1, 2, 10; Inv 4, Part 4, Steps 1, 3, 9, 11; Inv 5, Part 1, Steps 1, 3, 5; Inv 5, Part 2, Steps 1, 2; Inv 5, Part 3, Steps 2, 3	All investigations provide students with the opportunity to ask and answer questions about how they answered the focus question during the Wrap-Up/Warm-Up section. Other opportunities arise when students present information to their group or the whole class. Selected examples Inv 1, Part 1, Steps 1, 4, 8, 9; Inv 1, Part 2, Steps 5, 7, 8, 14; Inv 1, Part 3, Step 12; Inv 1, Part 4, Steps 1, 3, 7, 9, 14 Inv 2, Part 1, Step 8, 9, 11, 13-15; Inv 2, Part 3, Steps 6, 8, 9; Inv 2, Part 4, Steps 3, 6, 7, 8, 13, 14, 16 Inv 3, Part 1, Steps 1, 4, 6; Inv 3, Part 2, Step 6; Inv 3, Part 3, Step 1, 2, 8; Inv 3, Part 5, Step 2 4 Inv 4, Part 4, Step 5; Inv 4, Language extension. Find out about pottery Inv 5, Part 1, Steps 9, 11, 13, 14, 22 ; Inv 5, Part 2, Steps 6, 10, 20

SPEAKING AND LISTENING STANDARDS

	Standard	Solids and Liquids Module
Presentation of Knowledge and Ideas	4. Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.	All investigations provide students with the opportunity to report on their results. In the Wrap-Up/Warm-Up section students recount what they did in the investigation and share their answers to the focus question. Students report on what they learn from the text when discussing the articles in *FOSS Science Resources.* Selected examples Inv 1, Part 3, Step 7 Inv 2, Part 2, Step 10; Inv 2, Part 3, Step 20 Inv 3, Part 1, Step 17 Inv 4, Part 2, Steps 1, 27; Inv 4, Part 4, Step 23; Inv 4, Part 5, Step 1
	5. Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.	Students add drawings to their notebook entries to clarify their ideas and answers to the focus questions. Inv 1, Part 1, Step 13; Inv 1, Part 4, Steps 21, 23 Inv 3, Part 2, Step 11 Inv 4, Part 1, Step 26
	6. Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.	All investigations provide students with the opportunity to speak in complete sentences to provide details or clarification about their science learning. Sentence frames are provided for those students that need scaffolding. Selected examples Inv 1, Part 1, Step 13; Inv 1, Part 2, Step 7; Inv 1, Part 5, Step 16 Inv 2, Part 2, Step 19 Inv 3, Part 2, Step 11 Inv 4, Part 4, Step 18; Inv 4, Part 4, Step 26

Insects and Plants Module	Pebbles, Sand, and Silt Module
All investigations provide students with the opportunity to report on their results. In the Wrap-Up/Warm-Up section students recount what they did in the investigation and share their answers to the focus question. Students report on what they learn from the text when discussing the articles in *FOSS Science Resources.* Selected examples Inv 2, Part 2, Step 19; Inv 2, Part 3, Step 14; Inv 2, Part 4, Step 17 Inv 3, Part 3, Step 17 Inv 5, Part 1, Step 16	All investigations provide students with the opportunity to report on their results. In the Wrap-Up/Warm-Up section students recount what they did in the investigation and share their answers to the focus question. Students report on what they learn from the text when discussing the articles in *FOSS Science Resources.* Selected examples Inv 2, Part 2, Step 11, 12; Inv 2, Part 3, Step 21 Inv 3, Part 1, Step 13 Inv 4, Part 4, Step 2 Inv 5, Part 2, Step 12
Students add drawings to their notebook entries to clarify their ideas and answers to the focus questions. Inv 2, Part 2, Step 13; Inv 2, Part 3, Step 12; Inv 2, Part 4, Step 15, 20 Inv 3, Part 3, Step 1; Inv 3, Part 4, Steps 8-9 Inv 5, Part 2, Step 1; Inv 5, Part 3, Step 15; Inv 5, Language extension. Diagram life cycles	Students add drawings to their notebook entries to clarify their ideas and answers to the focus questions. Inv 2, Part 2, Step 9; Inv 2, Part 4, Step 27 Inv 4, Part 4, Step 7 Inv 5, Part 3, Step 11; Inv 5, Part 4, Step 6
All investigations provide students with the opportunity to speak in complete sentences to provide details or clarification about their science learning. Sentence frames are provided for those students that need scaffolding. Selected examples Inv 1, Part 1, Step 18 Inv 2, Part 2, Step 10; Inv 2, Part 3, Step 12 Inv 3, Part 1, Step 8; Inv 3, Part 2, Step 13, 17; Inv 3, Part 3, Step 1; Inv 3, Part 4, Step 9 Inv 4, Part 1, Steps 7, 12	All investigations provide students with the opportunity to speak in complete sentences to provide details or clarification about their science learning. Sentence frames are provided for those students that need scaffolding. Selected examples Inv 2, Part 2, Step 11; Inv 2, Part 3, Step 16

LANGUAGE STANDARDS

	Standard	Solids and Liquids Module
Conventions of Standard English	1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. a. Use collective nouns (e.g., *group*). b. Form and use frequently occurring irregular plural nouns (e.g., *feet*, *children*, *teeth*, *mice*, *fish*). c. Use reflexive pronouns (e.g., *myself*, *ourselves*). d. Form and use the past tense of frequently occurring irregular verbs (e.g., *sat*, *hid*, *told*). e. Use adjectives and adverbs, and choose between them depending on what is to be modified. f. Produce, expand, and rearrange complete simple and compound sentences (e.g., *The boy watched the movie*; *The little boy watched the movie*; *The action movie was watched by the little boy*).	All investigations provide opportunities for students to apply the conventions of English grammar when writing and speaking. Selected examples Inv 1, Part 2, Step 7; Inv 1, Part 3, Step 5 Inv 2, Part 2, Step 19 Inv 3, Part 1, Step 15 Inv 4, Part 2, Step 17; Inv 4, Part 4, Step 26
	2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Capitalize holidays, product names, and geographic names. b. Use commas in greetings and closings of letters. c. Use an apostrophe to form contractions and frequently occurring possessives. d. Generalize learned spelling patterns when writing words (e.g., cage→badge; boy→boil). e. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.	All investigations provide opportunities for students to demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing in their science notebooks and the I-Checks.
Knowledge of Language	3. Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Compare formal and informal uses of English.	All investigations provide opportunities for students to use their knowledge of language and its conventions when writing in their science notebooks, discussing the investigation, and reading the articles in *FOSS Science Resources.* Selected examples Inv 1, Part 3, Step 14 Inv 2, Part 2, Step 7 Inv 3, Part 1, Step 12 Inv 4, Part 2, Step 17; Inv 4, Part 4, Step 26

Insects and Plants Module	Pebbles, Sand, and Silt Module
All investigations provide opportunities for students to apply the conventions of English grammar when writing and speaking. Selected examples Inv 1, Part 1, Steps 16, 18; Inv 1, Part 2, Step 10 Inv 2, Part 1, Steps 11, 12; Inv 2, Part 4, Steps 16, 21 Inv 3, Part 3, Step 1; Inv 3, Part 4, Steps 17, 19 Inv 4, Part 1, Steps 7, 12, 16; Inv 4, Part 3, Step 13 Inv 4, Part 4, Step 15	All investigations provide opportunities for students to apply the conventions of English grammar when writing and speaking. Selected examples Inv 2, Part 2, Step 11; Inv 2, Part 3, Step 16
All investigations provide opportunities for students to demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing in their science notebooks and the I-Checks.	All investigations provide opportunities for students to demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing in their science notebooks and the I-Checks.
All investigations provide opportunities for students to use their knowledge of language and its conventions when writing in their science notebooks, discussing the investigation, and reading the articles in *FOSS Science Resources.* Selected examples Inv 1, Part 2, Steps 9, 11 Inv 2, Part 2, Steps 1-2, 6; Inv 2, Part 3, Step 14; Inv 2, Part 4, Step 21 Inv 3, Part 3, Step 1; Inv 3, Part 4, Step 17 Inv 4, Part 1, Steps 7, 12 Inv 5, Part 1, Step 3	All investigations provide opportunities for students to use their knowledge of language and its conventions when writing in their science notebooks, discussing the investigation, and reading the articles in *FOSS Science Resources.* Selected examples Inv 1, Part 5, Step 3 Inv 2, Part 3, Step 16 Inv 3, Part 1, Step 8

LANGUAGE STANDARDS (CONT.)

Vocabulary Acquisition and Use

Standard	Solids and Liquids Module
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 2 reading and content*, choosing flexibly from an array of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. b. Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., *happy/unhappy*, *tell/retell*). c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *addition*, *additional*). d. Use knowledge of the meaning of individual words to predict the meaning of compound words (e.g., *birdhouse*, *lighthouse*, *housefly*; *bookshelf*, *notebook*, *bookmark*). e. Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.	All investigations provide opportunities for students to determine or clarify meaning of academic and science-specific words and phrases while discussing the investigations and articles in *FOSS Science Resources.* Selected examples Inv 1, Part 1 Steps 16, 19 Inv 2, Part 2, Step 6 Inv 3, Part 1, Steps 1, 3, 13 Inv 4, Part 2, Step 15
5. Demonstrate understanding of word relationships and nuances in word meanings. a. Identify real-life connections between words and their use (e.g., describe foods that are *spicy* or *juicy*). b. Distinguish shades of meaning among closely related verbs (e.g., *toss*, *throw*, *hurl*) and closely related adjectives (e.g., *thin*, *slender*, *skinny*, *scrawny*).	All investigations provide students with opportunities to demonstrate understanding of word relationships (e.g., concept maps) and nuances of certain words that have a specific meaning in science, such as **matter, property, material, argument, claim, evidence, transparent, gravity, level, mixture, particle, model,** and **dissolve.** Selected examples Inv 1, Part 1, Step 17; Inv 1, Part 2, Step 15 Inv 2, Part 1, Step 10; Inv 2, Part 2, Step 6 Inv 3, Part 3, Steps 7, 12; Inv 3, Part 5, Step 7 Inv 4, Part 2, Step 15; Inv 4, Part 4, Steps 8-10, 15, 17
6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., *When other kids are happy that makes me happy*).	All investigations provide opportunities for students to use new science words and phrases acquired through science discussions and readings. Science vocabulary words are in bold when they are first introduced to students in *FOSS Science Resources.* Students also review the vocublary in the *Review vocabulary* section for each part of each investigation. Selected examples Inv 1, Part 2, Step 9; Inv 1, Part 4, Step 13; Inv 1, Part 5, Step 16; Inv 2, Part 2, Step 13; Inv 2, Part 3, Steps 10, 20 Inv 3, Part 1, Step 13; Inv 4, Part 1, Steps 20-21, 25-26; Inv 4, Part 2, Step 6; Inv 4, Part 4, Step 21

Insects and Plants Module	Pebbles, Sand, and Silt Module
All investigations provide opportunities for students to determine or clarify meaning of academic and science-specific words and phrases while discussing the investigations and articles in *FOSS Science Resources.* Selected examples Inv 1, Part 1, Step 18 Inv 2, Part 2, Step 16 Inv 3, Part 2, Step 19 Inv 4, Part 2, Step 13 Inv 5, Part 3, Steps 8, 17	All investigations provide opportunities for students to determine or clarify meaning of academic and science-specific words and phrases while discussing the investigations and articles in *FOSS Science Resources.* Selected examples Inv 1, Language extension. Create a property map Inv 2, Part 2, Step 8 Inv 3, Part 5, Step 12 Inv 4, Part 2, Step 8
All investigations provide students with opportunities to demonstrate understanding of word relationships (e.g., concept maps) and nuances of certain words that have a specific meaning in science, such as **insect, segment, stage, bud, stem, fruit, bug, evidence,** and **waste.** Selected examples Inv 1, Part 1, Step 19; Inv 1, Part 2, Step 16 Inv 2, Part 3, Step 12; Inv 2, Part 4, Step 21 Inv 3, Part 3, Step 3 Inv 4, Part 2, Steps 8, 10-15 Inv 5, Part 3, Steps 13, 17	All investigations provide students with opportunities to demonstrate understanding of word relationships (e.g., concept maps) and nuances of certain words that have a specific meaning in science, such as **dull, data, group, pattern, property, weathering, particle, cobble, plain, screen, settle, sink, clay, pebble, model, fine, matrix, natural resources, decay, gas, retain, soil, solid,** and **liquid.** Selected examples Inv 1, Part 1, Step 4; Inv 1, Part 5, Step 3; Inv 2, Part 3, Step 6 Inv 2, Part 3, Step 19; Inv 2, Part 4, Steps 19, 27 Inv 3, Part 1, Step 8; Inv 3, Part 3, Step 10 Inv 5, Part 2, Step 20; Inv 5, Part 3, Steps 6, 10
All investigations provide opportunities for students to use new science words and phrases acquired through science discussions and readings. Science vocabulary words are in bold when they are first introduced to students in *FOSS Science Resources.* Students also review the vocublary in the *Review vocabulary* section for each part of each investigation. Selected examples Inv 1, Part 1, Step 14; Inv 1, Part 2, Steps 9, 16, 17 Inv 2, Part 2, Steps 2, 16, 17, 19; Inv 2, Part 3, Step 6 Inv 4, Part 1, Step 7 Inv 5, Part 4, Step 3	All investigations provide opportunities for students to use new science words and phrases acquired through science discussions and readings. Science vocabulary words are in bold when they are first introduced to students in *FOSS Science Resources.* Students also review the vocublary in the *Review vocabulary* section for each part of each investigation. Selected examples Inv 1, Part 1, Step 14; Inv 1, Part 5, Step 3 Inv 2, Part 1, Steps 15, 16, 18; Inv 2, Part 2, Step 8 Inv 3, Part 1, Step 8; Inv 3, Part 2, Steps 6, 7 Inv 3, Part 3, Step 10 Inv 5, Part 3, Steps 4, 5