



Contents

Introduction	1
Reading Standards for Informational Text	4
Reading Standards: Foundational Skills.....	8
Writing Standards.....	10
Speaking and Listening Standards.....	16
Language Standards.....	20

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 for English Language Arts. 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 fifth 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 experiences 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.

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.

Fifth grade is a critical year for students as they consolidate their literacy skills and apply them across content areas and in different settings. Fifth graders read widely and deeply from a range of challenging

informational texts that support their content learning and expand their vocabulary. They communicate in complex and flexible ways that demonstrate understanding of task, purpose and audience. Fifth graders are expected to use the science and engineering practices to demonstrate their understanding of the core ideas. To accomplish this, students apply language structures for sequencing, comparing and contrasting, determining cause-and-effect relationships, and problem-solving.

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 report on a topic or present an opinion using appropriate facts and relevant, descriptive details (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 express their own clearly (SL 1).
- In the **data management** phase, students make observations, and then routinely record and organize data in their notebooks (W 10). The notebook provides a space for students to recall information from experience, gather information from print and other media, summarize or paraphrase information in notes (W 8) and to acquire and use general academic and domain-specific words and phrases (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 conducting short research projects that build knowledge through investigation of different aspects of a topic. (W 7).
- **Reading** articles in *FOSS Science Resources* and other recommended readings provides a plethora of opportunities to address all the fifth-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 Common Core State Standards 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 fifth-grade ELA standards; there are many more opportunities waiting to be created and explored by you and your students.

TEACHING NOTE

Throughout the fifth-grade FOSS modules, opportunities 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

	Grade 5 Standard	Mixtures and Solutions Module
Key Ideas and Details	1. Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	Discuss articles in <i>FOSS Science Resources</i> Inv 1, Part 2, Steps 22, 23 Inv 2, Part 2, Step 12; Inv 2, Part 3, Steps 10, 17 Inv 3, Part 2, Step 20; Inv 3, Part 3, Step 10 Inv 3, Part 4, Steps 15-17 Inv 4, Part 3, Steps 22, 23; Inv 4, Part 4, Steps 15, 26 Inv 5, Part 2, Step 17
	2. Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.	Discuss and review articles in <i>FOSS Science Resources</i> Inv 1, Part 2, Step 22; Inv 1, Part 3, Step 15 Inv 2, Part 2, Step 12 Inv 3, Part 1, Step 18; Inv 3, Part 2, Step 20 Inv 4, Part 1, Steps 23, 24; Inv 4, Part 3, Steps 22, 23 Inv 5, Part 1, Step 21; Inv 5, Part 2, Steps 17, 18
	3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.	Discuss articles in <i>FOSS Science Resources</i> Inv 1, Part 2, Step 22 Inv 2, Part 2, Step 11; Inv 2, Part 3, Step 10 Inv 3, Part 1, Step 17; Inv 3, Part 2, Step 20 Inv 4, Part 1, Steps 23, 24; Inv 4, Part 3, Steps 22, 23 Inv 5, Part 2, Steps 17, 18
Craft and Structure	4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a <i>grade 5 topic or subject area</i> .	All investigations provide opportunities for students to determine the meaning of academic and science-specific words and phrases while reading. Inv 1, Part 2, Step 22 Inv 2, Part 2, Step 12 Inv 3, Part 1, Step 18; Inv 3, Part 2, Step 20
	5. Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.	Compare and contrast text structure in <i>FOSS Science Resources</i> with other texts Inv 3, Part 2, Step 19 Inv 4, Part 1, Step 22 Inv 4, Part 3, Step 21 Inv 5, Part 2, Step 18
	6. Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.	Read and compare article topics in <i>FOSS Science Resources</i> to other texts. Selected examples Inv 2, Part 2, Step 12; Inv 3, Part 3, Step 10; Inv 4, Part 3, Step 22; Inv 4, Part 4, Steps 25, 27

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).

Earth and Sun Module	Living Systems Module
<p>Discuss articles in <i>FOSS Science Resources</i> Inv 1, Part 2, Steps 20, 21; Inv 1, Part 3, Steps 24, 25 Inv 2, Part 1, Steps 16, 17, 21; Inv 2, Part 2, Steps 11, 14 Inv 2, Part 4, Steps 21, 28; Inv 2, Part 5, Step 18 Inv 3, Part 1, Step 19; Inv 3, Part 2, Step 11 Inv 4, Part 2, Step 25; Inv 4, Part 3, Step 27 Inv 5, Part 3, Steps 23, 26; Inv 5, Part 4, Steps 13, 18</p>	<p>Discuss articles in <i>FOSS Science Resources</i> Inv 1, Part 1, Step 11; Inv 1, Part 2, Steps 6, 25, 26 Inv 1, Part 3, Steps 17, 19; Inv 1, Part 4, Step 16 Inv 2, Part 1, Step 24; Inv 2, Part 2, Step 8 Inv 3, Part 1, Steps 12, 33, 36; Inv 3, Part 2, Steps 8-9 Inv 4, Part 1, Step 7; Inv 4, Part 2, Steps 15, 17 Inv 4, Part 3, Step 11; Inv 4, Part 4, Step 11</p>
<p>Discuss and review articles in <i>FOSS Science Resources</i> Inv 1, Part 2, Steps 20, 21; Inv 1, Part 3, Steps 24, 25 Inv 2, Part 1, Steps 15, 20; Inv 2, Part 2, Step 14 Inv 3, Part 1, Steps 18, 19; Inv 3, Part 2, Step 8 Inv 4, Part 1, Step 25; Inv 4, Part 2, Step 24 Inv 5, Part 1, Steps 21, 25; Inv 5, Part 4, Steps 12, 13, 17</p>	<p>Discuss and review articles in <i>FOSS Science Resources</i> Inv 1, Part 1, Step 10; Inv 1, Part 2, Steps 5, 6, 25, 26 Inv 1, Part 3, Step 16; Inv 1, Part 4, Step 15 Inv 2, Part 1, Step 23; Inv 2, Part 2, Step 9 Inv 3, Part 1, Steps 12, 33, 36; Inv 3, Part 2, Steps 7, 10 Inv 4, Part 1, Steps 5, 6; Inv 4, Part 2, Steps 14-17</p>
<p>Discuss articles in <i>FOSS Science Resources</i> Inv 1, Part 2, Steps 20, 21; Inv 1, Part 3, Steps 24, 25 Inv 2, Part 1, Steps 16, 21; Inv 2, Part 2, Steps 11, 14 Inv 2, Part 4, Steps 21, 28; Inv 2, Part 5, Steps 17, 18, 23 Inv 3, Part 2, Step 11 Inv 4, Part 1, Steps 24, 25; Inv 4, Part 2, Steps 24, 25 Inv 5, Part 1, Steps 22, 23; Inv 5, Part 3, Steps 23, 26</p>	<p>Discuss articles in <i>FOSS Science Resources</i> Inv 1, Part 2, Steps 5, 25, 26; Inv 1, Part 3, Steps 16, 17 Inv 2, Part 1, Step 24; Inv 2, Part 2, Step 9 Inv 3, Part 1, Steps 12, 32, 33, 36; Inv 3, Part 2, Step 10; Inv 3, Part 3, Steps 17, 18 Inv 4, Part 1, Step 7; Inv 4, Part 2, Steps 15, 17; Inv 4, Part 3, Step 11; Inv 4, Part 4, Step 11</p>
<p>All investigations provide opportunities for students to determine the meaning of academic and science-specific words and phrases while reading. Inv 2, Part 2, Step 14; Inv 2, Part 5, Step 23 Inv 3, Part 1, Steps 18, 19; Inv 3, Part 3, Step 18 Inv 4, Part 2, Step 25; Inv 4, Part 3, Step 27 Inv 5, Part 3, Step 23, 26; Inv 5, Part 4, Step 12</p>	<p>All investigations provide opportunities for students to determine the meaning of academic and science-specific words and phrases while reading. Inv 1, Part 1, Step 11; Inv 1, Part 2, Step 27 Inv 2, Part 1, Step 23; Inv 2, Part 2, Step 9 Inv 3, Part 1, Steps 12, 31, 32, 33; Inv 3, Part 2, Step 7 Inv 4, Part 1, Step 5; Inv 4, Part 2, Step 18</p>
<p>Compare and contrast text structure in <i>FOSS Science Resources</i> with other texts Inv 2, Part 1, Step 21; Inv 2, Part 4, Step 21 Inv 3, Part 3, Step 18 Inv 4, Part 3, Step 28; Inv 4, Part 4, Step 27 Inv 5, Part 4, Step 13</p>	<p>Compare and contrast text structure in <i>FOSS Science Resources</i> with other texts Inv 1, Part 3, Step 17 Inv 3, Part 1, Step 36 Inv 4, Part 3, Step 11</p>
<p>Read and compare article topics in <i>FOSS Science Resources</i> to other texts. Selected examples Inv 2, Part 1, Step 21; Inv 2, Part 2, Step 11 Inv 2, Part 4, Step 21; Inv 2, Read Moon myths</p>	<p>Read and compare article topics in <i>FOSS Science Resources</i> to other texts. Selected examples Inv 1, Part 3, Step 17 Inv 4, Part 3, Step 11</p>

READING STANDARDS FOR INFORMATIONAL TEXT

	Grade 5 Standard	Mixtures and Solutions Module
Integration of Knowledge and Ideas	7. Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.	Use <i>FOSS Science Resources</i> to locate information. Selected examples Inv 1, Part 2, Step 22 Inv 2, Part 2, Step 12; Inv 2, Part 3, Step 10 Inv 4, Part 3, Step 22; Inv 4, Part 4, Step 24 Inv 5, Part 2, Steps 7, 17
	8. Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).	Read and discuss articles in <i>FOSS Science Resources</i> Inv 1, Part 2, Step 22 Inv 3, Part 1, Step 18; Inv 3, Part 3, Step 9 Inv 4, Part 1, Step 24; Inv 4, Part 4, Step 25
	9. Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.	Students can read their <i>FOSS Science Resources</i> as well as readings suggested on FOSSweb. Using several texts, students integrate information when speaking and writing about science content. Selected examples Inv 1, Part 4, Step 16 Inv 1, Language Extensions Inv 3, Part 3, Step 13; Inv 3, Part 4, Step 17 Inv 4, Part 3, Step 22; Inv 4, Part 4, Steps 25, 27
Range of Reading and Level of Text Complexity	10. By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4–5 text complexity band independently and proficiently.	All investigations provide opportunities for students to develop their ability to read and comprehend complex informational science text such as <i>FOSS Science Resources</i> .

Earth and Sun Module	Living Systems Module
<p>Use <i>FOSS Science Resources</i> to locate information. Selected examples Inv 2, Part 2, Step 13; Inv 2, Part 5, Steps 18, 20, 21 Inv 3, Part 2, Step 11 Inv 4, Part 2, Steps 23, 24; Inv 4, Part 3, Step 26 Inv 5, Part 1, Step 22; Inv 5, Part 3, Step 23 Inv 5, Part 4, Step 12</p>	<p>Use <i>FOSS Science Resources</i> to locate information. Selected examples Inv 1, Part 2, Steps 5, 25, 26; Inv 1, Part 3, Steps 16, 17 Inv 1, Part 4, Steps 14, 15 Inv 2, Part 1, Step 23; Inv 2, Part 2, Step 9 Inv 2, Part 3, Steps 7, 10 Inv 3, Part 1, Steps 12, 32, 33, 36; Inv 3, Part 2, Step 10; Inv 3, Part 3, Steps 17, 18 Inv 4, Part 2, Steps 14-18; Inv 4, Part 3, Step 11</p>
<p>Read and discuss articles in <i>FOSS Science Resources</i> Inv 1, Part 3, Steps 24, 25 Inv 2, Part 2, Step 14 Inv 3, Part 2, Step 11 Inv 5, Part 4, Step 17</p>	<p>Read and discuss articles in <i>FOSS Science Resources</i> Inv 1, Part 2, Step 4; Inv 1, Part 3, Step 19 Inv 2, Part 2, Step 9; Inv 2, Part 3, Step 9 Inv 3, Part 1, Step 33 Inv 4, Part 1, Step 6</p>
<p>Students can read their <i>FOSS Science Resources</i> as well as readings suggested on FOSSweb. Using several texts, students integrate information when speaking and writing about science content. Selected examples Inv 2, Part 2, Step 11 Inv 3, Part 3, Step 18 Inv 4, Part 3, Step 28; Inv 4, Part 4, Step 27 Inv 5, Part 3, Step 26; Inv 5, Part 4, Steps 13, 18</p>	<p>Students can read their <i>FOSS Science Resources</i> as well as readings suggested on FOSSweb. Using several texts, students integrate information when speaking and writing about science content. Selected examples Inv 1, Part 2, Step 26; Inv 1, Part 3, Step 17 Inv 2, Science Extensions. Read about the man with the hole in his stomach Inv 3, Part 1, Step 36</p>
<p>All investigations provide opportunities for students to develop their ability to read and comprehend complex informational science text such as <i>FOSS Science Resources</i>.</p>	<p>All investigations provide opportunities for students to develop their ability to read and comprehend complex informational science text such as <i>FOSS Science Resources</i>.</p>

READING STANDARDS: FOUNDATIONAL SKILLS

	Grade 5 Standard	Mixtures and Solutions Module
Phonics and Word Recognition	<p>3. Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p>a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.</p>	<p>All investigations provide opportunities for students to apply decoding skills while reading articles in <i>FOSS Science Resources</i>.</p> <p>Selected example Inv 2, Part 2, Step 10</p>
Fluency	<p>4. Read with sufficient accuracy and fluency to support comprehension.</p> <p>a. Read grade-level text with purpose and understanding.</p> <p>b. Read grade-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.</p> <p>c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</p>	<p>All investigations provide opportunities for students to practice reading with accuracy and fluency.</p> <p>Selected examples Inv 1, Part 2, Step 22; Inv 1, Part 3, Step 15 Inv 1, Part 4, Step 14 Inv 2, Part 2, Step 11; Inv 2, Part 3, Steps 9, 16 Inv 3, Part 1, Step 18; Inv 3, Part 2, Step 19 Inv 3, Part 3, Steps 9, 12; Inv 3, Part 4, Step 14 Inv 4, Part 1, Step 23; Inv 4, Part 3, Step 21 Inv 4, Part 4, Steps 14, 23, 26 Inv 5, Part 1, Step 20; Inv 5, Part 2, Step 16</p>

Earth and Sun Module	Living Systems Module
<p>All investigations provide opportunities for students to apply decoding skills while reading articles in <i>FOSS Science Resources</i>.</p> <p>Selected example Inv 2, Part 2, Step 14</p>	<p>All investigations provide opportunities for students to apply decoding skills while reading articles in <i>FOSS Science Resources</i>.</p> <p>Selected example Inv 2, Part 2, Step 9</p>
<p>All investigations provide opportunities for students to practice reading with accuracy and fluency.</p> <p>Selected examples Inv 1, Part 2, Step 21; Inv 1, Part 3, Step 24 Inv 2, Part 2, Step 12; Inv 2, Part 4, Steps 20, 27 Inv 2, Part 5, Steps 17, 21, 23 Inv 3, Part 1, Step 18; Inv 3, Part 2, Step 10 Inv 3, Part 3, Step 17 Inv 4, Part 1, Step 23; Inv 4, Part 2, Step 23 Inv 4, Part 3, Step 26; Inv 4, Part 4, Step 26 Inv 5, Part 1, Step 21; Inv 5, Part 3, Steps 21, 25 Inv 5, Part 4, Steps 12, 17</p>	<p>All investigations provide opportunities for students to practice reading with accuracy and fluency.</p> <p>Selected examples Inv 1, Part 1, Step 10; Inv 1, Part 2, Steps 5, 25 Inv 1, Part 3, Step 16; Inv 1, Part 4, Step 14 Inv 2, Part 1, Step 22; Inv 2, Part 2, Step 8 Inv 2, Part 3, Steps 5, 9 Inv 3, Part 1, Steps 12, 32-35; Inv 3, Part 2, Steps 6-9 Inv 4, Part 2, Steps 14, 16</p>

WRITING STANDARDS

Grade 5 Standard	Mixtures and Solutions Module
<p>1. Write opinion pieces on topics or texts, supporting a point of view with reasons and information.</p> <p>a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer’s purpose.</p> <p>b. Provide logically ordered reasons that are supported by facts and details.</p> <p>c. Link opinion and reasons using words, phrases, and clauses (e.g., <i>consequently, specifically</i>).</p> <p>d. Provide a concluding statement or section related to the opinion presented.</p>	<p>All investigations provide opportunities for students to write their opinion, or claim, supported by reasons. Students answer questions (focus questions, response sheets, assessments) by stating their claim supported by evidence and reasoning.</p> <p>Selected examples Inv 1, Part 2, Step 9; Inv 1, Part 4, Step 11 Inv 4, Part 1, Step 20; Inv 4, Part 2, Step 12 Inv 4, Part 3, Steps 11, 17 Inv 5, Part 1, Step 18; Inv 5, Part 2, Step 15</p>
<p>2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <p>a. Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.</p> <p>c. Link ideas within and across categories of information using words, phrases, and clauses (e.g., <i>in contrast, especially</i>).</p> <p>d. Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>e. Provide a concluding statement or section related to the information or explanation presented.</p>	<p>All investigations provide opportunities for students to write explanatory texts to examine the science topic they are learning. In every part, students write an explanation as part of their answer to the focus question or the response sheet.</p> <p>Selected examples Inv 1, Part 4, Step 18 Inv 3, Part 1, Step 14; Inv 3, Part 2, Step 17 Inv 3, Part 4, Steps 10, 18 Inv 4, Part 4, Steps 20, 29</p>
<p>3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <p>a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.</p> <p>b. Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations.</p> <p>c. Use a variety of transitional words, phrases, and clauses to manage the sequence of events.</p> <p>d. Use concrete words and phrases and sensory details to convey experiences and events precisely.</p> <p>e. Provide a conclusion that follows from the narrated experiences or events.</p>	<p>All investigations provide opportunities for students to write narratives. Students describe their observations and experiences with the science ideas they are exploring.</p> <p>Selected examples Inv 1, Part 3, Step 13 Inv 2, Language Extensions. Write procedures for construction Inv 5, Language Extensions. Describe the reaction. Apply the reaction</p>

<p style="text-align: center;">Earth and Sun Module</p>	<p style="text-align: center;">Living Systems Module</p>
<p>All investigations provide opportunities for students to write their opinion, or claim, supported by reasons. Students answer questions (focus question, response sheets, assessments) by stating their claim supported by evidence and reasoning.</p> <p>Selected example Inv 4, Part 4, Step 24</p>	<p>All investigations provide opportunities for students to write their opinion, or claim, supported by reasons. Students answer questions (focus question, response sheets, assessments) by stating their claim supported by evidence and reasoning.</p> <p>Selected examples Inv 1, Part 2, Step 28 Inv 2, Part 2, Step 8, 9; Inv 2, Part 3, Step 17</p>
<p>All investigations provide opportunities for students to write explanatory texts to examine the science topic they are learning. In every part, students write an explanation as part of their answer to the focus question or the response sheet.</p> <p>Selected examples Inv 1, Part 1, Step 15; Inv 1, Part 2, Step 22 Inv 1, Part 3, Steps 25, 29 Inv 2, Part 2, Step 9 Inv 3, Part 3, Step 15; Inv 3, Part 3, Step 19 Inv 4, Part 1, Step 21; Inv 4, Part 2, Step 27 Inv 4, Part 3, Step 23; Inv 4, Part 4, Step 28 Inv 5, Part 1, Step 18; Inv 5, Part 2, Steps 8, 9</p>	<p>All investigations provide opportunities for students to write explanatory texts to examine the science topic they are learning. In every part, students write an explanation as part of their answer to the focus question or the response sheet.</p> <p>Selected examples Inv 1, Part 1, Step 12; Inv 1, Part 3, Steps, 12, 14; Inv 1, Part 4, Step 18 Inv 2, Part 1, Step 26; Inv 2, Part 2, Step 14 Inv 2, Part 3, Steps 16, 24 Inv 3, Part 1, Step 39; Inv 3, Part 2, Step 16 Inv 3, Part 3, Step 14; Inv 3, Language Extension. Write about making maple syrup Inv 4, Part 2, Steps 19, 20; Inv 4, Part 3, Step 7 Inv 4, Part 4, Step 12</p>
<p>All investigations provide opportunities for students to write narratives. Students describe their observations and experiences with the science ideas they are exploring.</p> <p>Selected examples Inv 1, Language Extensions. Go on a treasure hunt, Describe shadows</p>	<p>All investigations provide opportunities for students to write narratives. Students describe their observations and experiences with the science ideas they are exploring.</p> <p>Selected examples Inv 4, Language Extensions. Write captions for pictures</p>

WRITING STANDARDS (CONT.)

Grade 5 Standard	Mixtures and Solutions Module
<p>4. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</p>	<p>All investigations provide opportunities for students to record and organize their data in their science notebooks. Based on their data, students construct and write their explanations.</p> <p>Selected examples</p> <p>Inv 1, Part 1, Step 19; Part 2, Step 13 Inv 1, Part 3, Steps 6, 13; Inv 1, Part 4, Steps 11, 15, 18 Inv 1, Language Extension. Invent a gorp recipe Inv 2, Part 3, Step 14 Inv 2, Language Extension. Write procedures for construction Inv 3, Part 1, Step 14; Inv 3, Part 3, Step 2 Inv 3, Part 4, Step 10 Inv 4, Part 1, Step 20; Inv 4, Part 2, Steps 12, 16 Inv 4, Part 3, Step 17; Inv 4, Part 4, Step 20 Inv 5, Part 3, Step 14</p>
<p>5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 5.)</p>	<p>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.</p> <p>Inv 1, Part 3, Step 23; Inv 1, Part 4, Step 17 Inv 2, Part 3, Steps 13, 17 Inv 3, Part 3, Step 14 Inv 4, Part 3, Step 22</p> <p>The Wrap-up review focus question section at the end of each investigation and next-step strategies after answering the response sheets or taking the I-Check also serve as a method for strengthening writing.</p>
<p>6. With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.</p>	

Earth and Sun Module	Living Systems Module
<p>All investigations provide opportunities for students to record and organize their data in their science notebooks. Based on their data, students construct and write their explanations.</p> <p>Selected examples</p> <p>Inv 1, Part 1, Step 15; Inv 1, Part 2, Step 19 Inv 3, Part 3, Step 15 Inv 4, Part 1, Step 21; Inv 4, Part 4, Step 24 Inv 5, Part 2, Step 8</p>	<p>All investigations provide opportunities for students to record and organize their data in their science notebooks. Based on their data, students construct and write their explanations.</p> <p>Selected examples</p> <p>Inv 1, Part 1, Step 12; Inv 1, Part 2, Step 28 Inv 2, Part 1, Step 26; Inv 2, Part 3, Steps 16, 17, 24 Inv 3, Part 2, Step 16; Inv 3, Part 3, Step 14</p>
<p>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.</p> <p>Inv 1, Part 2, Step 25 Inv 3, Part 1, Step 20 Inv 4, Part 1, Step 27; Inv 4, Part 2, Step 29</p> <p>The Wrap-up review focus question section at the end of each investigation and next-step strategies after answering the response sheets or taking the I-Check also serve as a method for strengthening writing.</p>	<p>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.</p> <p>Inv 1, Part 1, Step 14; Inv 1, Part 2, Step 30; Inv 1, Part 3, Step 21 Inv 2, Part 1, Step 28; Inv 2, Part 2, Step 19 Inv 4, Part 4, Steps 4, 8</p> <p>The Wrap-up review focus question section at the end of each investigation and next-step strategies after answering the response sheets or taking the I-Check also serve as a method for strengthening writing.</p>
<p>Inv 5, Science and Engineering Extension. Search for severe weather</p>	<p>Inv 2, Part 1, Step 24 Inv 3, Part 1, Step 12</p>

WRITING STANDARDS (CONT.)

	Grade 5 Standard	Mixtures and Solutions Module
Research to Build and Present Knowledge	7. Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.	<p>All investigations provide opportunities for students to further investigate different aspects of the science topic.</p> <p>Inv 1, Science Extensions. Research diatomaceous earth. Research sodium chloride; Inv 1, Engineering Extension. Engineering without borders Inv 2, Part 2, Step 12; Inv 2, Part 3, Step 10 Inv 3, Part 3, Step 13 Inv 3, Science Extensions. Investigate drinks Inv 4, Part 3, Step 19; Inv 4, Part 4, Steps 12, 25, 27 Inv 4, Language Extensions. Find citric acid; Inv 4, Science Extensions. Change the temperature Inv 5, Science and Engineering Extensions. Investigate baking powder and baking soda</p>
	8. Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.	<p>All investigations provide students with the opportunity to write and record their observations in their science notebooks. Students also take notes and organize information when reading articles.</p> <p>Selected examples Inv 1, Part 1, Steps 4, 7, 19; Inv 1, Part 2, Steps 6, 7, 21 Inv 1, Part 3, Steps 14, 15; Inv 1, Part 4, Steps 16, 18 Inv 2, Part 1, Steps 5, 28, 11; Inv 2, Part 3, Step 3 Inv 2, Part 3, Steps 6, 9, 16 Inv 3, Part 1, Step 12; Inv 3, Part 2, Steps 16, 18 Inv 3, Part 3, Steps 2, 6, 8, 9; Inv 3, Part 4, Steps 10, 14 Inv 4, Part 3, Steps 4, 6, 9, 11, 21; Inv 4, Part 4, Step 14 Inv 5, Part 1, Step 12; Inv 5, Part 2, Steps 13, 17 Inv 5, Part 3, Steps 3, 5, 8, 18, 19</p>
Range of Writing	<p>9. Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <p>a. Apply <i>grade 5 Reading standards</i> to literature (e.g., “Compare and contrast two or more characters, settings, or events in a story or a drama, drawing on specific details in the text [e.g., how characters interact]”).</p> <p>b. Apply <i>grade 5 Reading standards</i> to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point[s]”).</p>	<p>All investigations provide opportunities to use the <i>FOSS Science Resources</i> as a source from which to draw evidence to support their ideas (e.g., discussion questions at the end of the articles).</p> <p>Selected examples Inv 1, Part 2, Step 22 Inv 1, Part 4, Step 18 Inv 2, Part 3, Step 17 Inv 4, Part 3, Step 21 Inv 5, Part 3, Step 19</p>

Earth and Sun Module	Living Systems Module
<p>All investigations provide opportunities for students to further investigate different aspects of the science topic.</p> <p>Inv 1, Science and Engineering Extensions. Research sundials; Inv 1, Social Studies Extensions. Research shadow theater Inv 2, Part 1, Steps 16, 21; Inv 2, Part 5, Step 23 Inv 2, Language Extensions. Research Apollo missions. Inv 2, Science Extensions. Investigate eclipses, Research the moons of other planets Inv 3, Part 3, Step 18; Inv 3, Language Extensions. Explore weather topics, Research weather lore Inv 3, Science Extensions. Track weather reports. Find out how digital weather stations work. Inv 5, Science and Engineering Extensions. USDA plant hardiness zone map.</p>	<p>All investigations provide opportunities for students to further investigate different aspects of the science topic.</p> <p>Inv 1, Science Extension. Research vermicomposting Inv 2, Language Extension. Find sugars in products; Inv 2, Science Extensions. Test sugar content of breakfast cereals, Research other digestive organs, Research dialysis Inv 3, Part 1, Step 36; Inv 3, Science Extensions. Investigate flowers, Research asthma, Find out about hearts of other animals</p>
<p>All investigations provide students with the opportunity to write and record their observations in their science notebooks. Students also take notes and organize information when reading articles.</p> <p>Selected examples Inv 1, Part 1, Steps 2, 7, 15 Inv 1, Part 2, Steps 19, 2; Inv 1, Part 3, Steps 23-26 Inv 2, Part 1, Steps 7, 10, 15, 20; Inv 2, Part 4, Steps 11, 18, 27; Inv 2, Part 5, Steps 7, 11, 15, 18, 23 Inv 3, Part 1, Steps 6, 12, 16-18; Inv 3, Part 2, Steps 7, 8, 10; Inv 3, Part 3, Steps 1, 10, 13, 15, 17 Inv 4, Part 1, Steps 6, 15, 21, 24; Inv 4, Part 2, Step 1 Inv 4, Part 3, Steps 10, 14, 20, 25, 28 Inv 4, Part 4, Steps 10, 17 Inv 5, Part 1, Steps 12, 13, 18, 21; Inv 5, Part 2, Steps 8, 9</p>	<p>All investigations provide students with the opportunity to write and record their observations in their science notebooks. Students also take notes and organize information when reading articles.</p> <p>Selected examples Inv 1, Part 1, Steps 10-12; Inv 1, Part 3, Steps 10, 12 Inv 2, Part 1, Steps 8, 19, 23; Inv 2, Part 2, Steps 5, 8, 10, 12, 14, 17 Inv 2, Part 3, Steps 7, 9, 10, 12, 16 Inv 2, Part 1, Step 23; Inv 2, Part 2, Step 9 Inv 3, Part 1, Steps 12, 24, 30, 32, 35, 36, 39 Inv 3, Part 2, Steps 6, 8, 10, 16, 17 Inv 3, Part 3, Steps 4, 6, 14 Inv 4, Part 1, Steps 18, 27 Inv 4, Part 2, Steps 2, 14, 18, 19; Inv 4, Part 4, Steps 9-11</p>
<p>All investigations provide opportunities to use the <i>FOSS Science Resources</i> as a source from which to draw evidence to support their ideas (e.g., discussion questions at the end of the articles).</p> <p>Selected examples Inv 1, Part 2, Steps 20, 21 Inv 2, Part 4, Step 11 Inv 3, Part 3, Step 18 Inv 4, Part 1, Step 23; Inv 4, Part 3, Step 25 Inv 4, Part 4, Step 25 Inv 5, Part 1, Step 22</p>	<p>All investigations provide opportunities to use the <i>FOSS Science Resources</i> as a source from which to draw evidence to support their ideas (e.g., discussion questions at the end of the articles).</p> <p>Selected examples Inv 1, Part 2, Steps 5, 25, 26; Inv 1, Part 3, Steps 16, 17 Inv 1, Part 4, Steps 14, 15 Inv 2, Part 1, Step 23; Inv 2, Part 3, Steps 7, 10 Inv 3, Part 1, Steps 12, 32-36; Inv 3, Part 2, Step 10 Inv 3, Part 3, Steps 4, 6 Inv 4, Part 4, Step 11</p>

SPEAKING AND LISTENING STANDARDS

Grade 5 Standard	Mixtures and Solutions Module
<p>1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 5 topics and texts</i>, building on others' ideas and expressing their own clearly.</p> <p>a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p>b. Follow agreed-upon rules for discussions and carry out assigned roles.</p> <p>c. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.</p> <p>d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.</p>	<p>All investigations provide students ample opportunities to engage in a range of collaborative discussions. Students discuss before, during, and after the active investigation and during the Wrap-up/ Warm-up section.</p> <p>Selected examples</p> <p>Inv 1, Part 1, Step 22; Part 2, Step 5 Inv 1, Part 3, Steps 6, 21, 23 Inv 2, Part 1, Steps 13, 24; Inv 2, Part 2, Step 13 Inv 3, Part 1, Step 21; Inv 3, Part 2, Step 21 Inv 3, Part 3, Steps 6, 14 Inv 4, Part 1, Steps 3, 11, 13, 25; Inv 4, Part 2, Step 6 Inv 5, Part 1, Steps 14, 22; Inv 5, Part 2, Steps 2, 20 Inv 5, Part 3, Steps 7, 10</p> <p>Discuss articles in <i>FOSS Science Resources</i> in pairs, small groups, and whole class. Selected examples</p> <p>Inv 1, Part 2, Step 22, 25; Inv 1, Part 4, Step 16 Inv 3, Part 1, Step 19; Inv 3, Part 3, Step 20 Inv 4, Part 1, Step 24; Inv 4, Part 3, Step 6 Inv 5, Part 2, Step 17</p>
<p>2. Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.</p>	<p>Discuss articles read aloud in <i>FOSS Science Resources</i> and online activities. Selected examples</p> <p>Inv 1, Part 1, Step 21; Inv 1, Part 2, Steps 22, 25 Inv 2, Part 2, Step 10; Inv 2, Part 3, Step 10 Inv 3, Part 1, Step 19; Inv 3, Part 3, Step 8 Inv 4, Part 1, Steps 23, 24</p> <p>Video discussions</p> <p>Inv 2, Part 3, Step 11; Inv 5, Part 3, Step 16</p>
<p>3. Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.</p>	<p>All investigations provide students with opportunities to summarize discussion points and explain how claims are supported by reasons and evidence (e.g., students compare their responses to the focus question and the response sheets during the Wrap-up/ Warm-up section). Other opportunities arise when students present information to their group or the whole class.</p> <p>Selected examples</p> <p>Inv 1, Part 2, Step 18 Inv 3, Part 3, Step 10 Inv 4, Part 4, Step 2; Inv 4, Part 4, Step 19</p>

Earth and Sun Module	Living Systems Module
<p>All investigations provide students ample opportunities to engage in a range of collaborative discussions. Students discuss before, during, and after the active investigation and during the Wrap-up/Warm-up section.</p> <p>Selected examples Inv 1, Part 1, Step 17; Inv 1, Part 2, Step 25 Inv 1, Part 3, Steps 1, 13, 28 Inv 2, Part 2, Step 15; Inv 2, Part 3, Step 1 Inv 2, Part 4, Step 32; Inv 2, Part 5, Steps 8, 14 Inv 3, Part 1, Step 20; Inv 3, Part 2, Step 11 Inv 4, Part 1, Steps 3, 5, 18, 27; Inv 4, Part 2, Steps 11, 15, 21 Inv 4, Part 3, Steps 9, 21, 29; Inv 4, Part 4, Steps 4, 5, 17, 20 Inv 5, Part 1, Steps 4, 6, 23; Inv 5, Part 3, Step 28 Discuss articles in <i>FOSS Science Resources</i> in pairs, small groups, and whole class. Selected examples Inv 1, Part 2, Steps 21, 22 Inv 2, Part 4, Steps 24, 27, 28 Inv 3, Part 2, Step 13 Inv 4, Part 1, Step 25; Inv 4, Part 3, Steps 24, 25, 27 Inv 5, Part 3, Step 26; Inv 5, Part 4, Step 18</p>	<p>All investigations provide students ample opportunities to engage in a range of collaborative discussions. Students discuss before, during, and after the active investigation and during the Wrap-up/Warm-up section.</p> <p>Selected examples Inv 1, Part 1, Step 12; Inv 1, Part 2, Steps 28, 30 Inv 1, Part 3, Step 21 Inv 2, Part 1, Steps 3-5, 28; Inv 2, Part 2, Steps 1, 4, 16, 19 Inv 3, Part 1, Step 41; Inv 3, Part 2, Step 18 Inv 4, Part 1, Step 32; Inv 4, Part 2, Step 21; Inv 4, Part 3, Step 13 Discuss articles in <i>FOSS Science Resources</i> in pairs, small groups, and whole class. Selected examples Inv 1, Part 2, Steps 6, 26; Inv 1, Part 4, Step 16 Inv 2, Part 1, Step 24; Inv 2, Part 2, Step 8, 9; Inv 2, Part 3, Steps 9, 10 Inv 3, Part 1, Step 12; Inv 3, Part 2, Steps 7, 9, 10</p>
<p>Discuss articles read aloud in <i>FOSS Science Resources</i> and online activities. Selected examples Inv 1, Part 3, Steps 24, 25, 29 Inv 2, Part 5, Step 17 Inv 3, Part 1, Steps 13, 14 Video discussions Inv 2, Part 4, Step 29; Inv 4, Part 3, Step 16 Inv 5, Part 1, Step 21; Inv 5, Part 3, Step 25</p>	<p>Discuss articles read aloud in <i>FOSS Science Resources</i> and online activities. Selected examples Inv 1, Part 2, Steps 6, 10, 24; Inv 1, Part 3, Steps 8, 16, 17 Video discussions Inv 1, Part 2, Step 3 Inv 2, Part 3, Steps 8, 11; Inv 2, Part 3, Step 9 Inv 3, Part 1, Steps 12, 32, 34; Inv 3, Part 2, Steps 5, 7 Inv 4, Part 3, Step 4; Inv 4, Part 4, Step 7</p>
<p>All investigations provide students with opportunities to summarize discussion points and explain how claims are supported by reasons and evidence (e.g., students compare their responses to the focus question and the response sheets during the Wrap-up/Warm-up section). Other opportunities arise when students present information to their group or the whole class.</p> <p>Selected examples Inv 4, Part 1, Step 26 Inv 5, Part 4, Step 18</p>	<p>All investigations provide students with opportunities to summarize discussion points and explain how claims are supported by reasons and evidence (e.g., students compare their responses to the focus question and the response sheets during the Wrap-up/Warm-up section). Other opportunities arise when students present information to their group or the whole class.</p> <p>Selected examples Inv 3, Part 3, Steps 7, 20</p>

SPEAKING AND LISTENING STANDARDS (CONT.)

Grade 5 Standard	Mixtures and Solutions Module
<p>4. Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.</p>	<p>All investigations provide students with the opportunity to report on what they know about science topics and to make claims based on their observations and experiences. In the Wrap-up/ Warm-up section students share their answers to the focus question using evidence to support their ideas. Students report on what they learn from the text when discussing the articles in <i>FOSS Science Resources</i>.</p> <p>Selected examples Inv 1, Part 1, Steps 3, 7, 8, 15; Inv 1, Part 2, Steps 1, 8, 14; Inv 1, Part 3, Steps 10, 14, 19 Inv 1, Part 4, Steps 4, 7, 10, 13 Inv 2, Part 2, Step 6; Inv 2, Part 3, Steps 5, 8, 15 Inv 3, Part 1, Steps 4-6; Inv 3, Part 3, Step 5 Inv 3, Part 4, Step 13 Inv 4, Part 1, Step 15; Inv 4, Part 2, Step 9; Inv 4, Part 4, Steps 6, 13, 23, 27 Inv 5, Part 2, Steps 3, 16; Inv 5, Part 3, Steps 4, 6, 18, 19</p>
<p>5. Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.</p>	<p>Inv 1, Part 2, Step 8 Inv 2, Part 1, Steps 16, 24; Inv 2, Part 2, Step 6 Inv 3, Part 3, Steps 5, 12 Inv 4, Part 4, Step 18 Inv 5, Part 2, Step 17</p>
<p>6. Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation. (See grade 5 Language standards 1 and 3 for specific expectations.)</p>	<p>All investigations provide students with situations in which they use either informal (small-group discussions) or formal discourse structures and procedures (whole-group sharing). Protocols and sentence frames are provided for students who need support.</p> <p>Selected examples Inv 1, Part 2, Step 23 Inv 2, Part 1, Step 27 Inv 4, Part 4, Step 19</p>

Presentation of Knowledge and Ideas

Earth and Sun Module	Living Systems Module
<p>All investigations provide students with the opportunity to report on what they know about science topics and to make claims based on their observations and experiences. In the Wrap-up/Warm-up section students share their answers to the focus question using evidence to support their ideas. Students report on what they learn from the text when discussing the articles in <i>FOSS Science Resources</i>.</p> <p>Selected examples Inv 1, Part 1, Steps 1, 7, 8, 12; Inv 1, Part 2, Step 13 Inv 1, Part 3, Steps 2, 3, 5, 7, 10, 20, 24; Inv 1, Language Extensions. Read Sun and shadow stories Inv 2, Part 1, Steps 9, 11; Inv 2, Part 4, Steps 18, 21, 30 Inv 2, Part 5, Steps 1, 2, 14, 16 Inv 3, Part 1, Steps 1, 8, 9, 12, 17; Inv 3, Part 3, Steps 2, 3, 5 Inv 3, Science Extensions. Explore careers in meteorology Inv 4, Part 1, Steps 16, 18, 23, 25, 27 Inv 4, Part 2, Steps 1, 2, 7, 10, 12, 15, 19, 24, 25; Inv 4, Part 4, Steps 1, 5, 22, 26, 27 Inv 5, Part 1, Steps 7, 14, 22; Inv 5, Part 2, Step 5; Inv 5, Part 3, Step 15, 17; Inv 5, Part 4, Steps 2, 4-6, 8, 13</p>	<p>All investigations provide students with the opportunity to report on what they know about science topics and to make claims based on their observations and experiences. In the Wrap-up/Warm-up section students share their answers to the focus question using evidence to support their ideas. Students report on what they learn from the text when discussing the articles in <i>FOSS Science Resources</i>.</p> <p>Selected examples Inv 1, Part 1, Steps 5, 7, 10; Inv 1, Part 2, Steps 25, 26 Inv 1, Part 3, Step 15; Inv 1, Part 4, Steps 2, 6, 9, 10, 14 Inv 2, Part 1, Steps 3, 11, 12, 19, 21, 22, 24 Inv 2, Part 2, Steps 9-11, 13, 16 Inv 2, Part 3, Steps 9, 10, 12, 13, 15 Inv 3, Part 1, Step 12; Inv 3, Part 2, Steps 16-10, 14 Inv 3, Part 3, Step 6 Inv 4, Part 1, Steps 23, 26, 30 Inv 4, Part 2, Steps 11, 14, 15, 17,</p>
<p>Inv 1, Part 1, Step 17; Inv 1, Part 3, Steps 12, 20 Inv 2, Part 5, Steps 7, 9, 14, 21 Inv 3, Part 1, Steps 12, 13; Inv 3, Science Extensions. Draw atmospheric posters Inv 5, Part 1, Step 20</p>	<p>Inv 1, Part 2, Steps 21, 26 Inv 2, Part 2, Steps 9, 19; Inv 2, Part 3, Step 15 EL Note Inv 3, Part 2, Step 14; Inv 3, Science Extensions. Diagram an organ system</p>
<p>All investigations provide students with situations in which they use either informal (small-group discussions) or formal discourse structures and procedures (whole-group sharing). Protocols and sentence frames are provided for students who need support.</p> <p>Selected examples Inv 1, Part 3, Step 20 Inv 3, Part 1, Step 13 Inv 4, Part 2, Steps 23, 29 Inv 5, Part 1, Step 21</p>	<p>All investigations provide students with situations in which they use either informal (small-group discussions) or formal discourse structures and procedures (whole-group sharing). Protocols and sentence frames are provided for students who need support.</p> <p>Selected examples Inv 1, Part 2, Step 21; Inv 1, Part 4, Step 9 Inv 2, Part 2, Step 9 Inv 3, Part 1, Step 33; Inv 3, Part 2, Step 14</p>

LANGUAGE STANDARDS

	Grade 5 Standard	Mixtures and Solutions Module
Conventions of Standard English	<p>1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>a. Explain the function of conjunctions, prepositions, and interjections in general and their function in particular sentences.</p> <p>b. Form and use the perfect (e.g., <i>I had walked; I have walked; I will have walked</i>) verb tenses.</p> <p>c. Use verb tense to convey various times, sequences, states, and conditions.</p> <p>d. Recognize and correct inappropriate shifts in verb tense.</p> <p>e. Use correlative conjunctions (e.g., <i>either/or, neither/nor</i>).</p>	<p>All investigations provide opportunities for students to apply the conventions of English grammar when writing and speaking.</p> <p>Selected example Inv 1, Part 1, Step 14</p>
	<p>2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>a. Use punctuation to separate items in a series.</p> <p>b. Use a comma to separate an introductory element from the rest of the sentence.</p> <p>c. Use a comma to set off the words <i>yes</i> and <i>no</i> (e.g., <i>Yes, thank you</i>), to set off a tag question from the rest of the sentence (e.g., <i>It's true, isn't it?</i>), and to indicate direct address (e.g., <i>Is that you, Steve?</i>).</p> <p>d. Use underlining, quotation marks, or italics to indicate titles of works.</p> <p>e. Spell grade-appropriate words correctly, consulting references as needed.</p>	<p>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, response sheets, and I-Checks.</p>
Knowledge of Language	<p>3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>a. Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.</p> <p>b. Compare and contrast the varieties of English (e.g., dialects, registers) used in stories, dramas, or poems.</p>	<p>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 <i>FOSS Science Resources</i>.</p> <p>Selected examples Inv 3, Part 1, Step 21; Inv 3, Part 2, Step 21 Inv 3, Part 3, Step 13; Inv 3, Part 4, Step 8</p>

Earth and Sun Module	Living Systems Module
<p>All investigations provide opportunities for students to apply the conventions of English grammar when writing and speaking.</p> <p>Selected examples Inv 1, Part 1, Step 15 Inv 4, Part 3, Step 9 Inv 5, Part 3, Step 26</p>	<p>All investigations provide opportunities for students to apply the conventions of English grammar when writing and speaking.</p> <p>Selected examples Inv 1, Part 2, Step 28; Inv 1, Part 3, Step 12 Inv 2, Part 1, Step 26 Inv 3, Part 3, Step 14 Inv 4, Part 3, Step 8</p>
<p>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, response sheets, and I-Checks.</p>	<p>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, response sheets, and I-Checks.</p>
<p>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 <i>FOSS Science Resources</i>.</p> <p>Selected example Inv 2, Part 4, Step 20</p>	<p>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 <i>FOSS Science Resources</i>.</p> <p>Selected example Inv 1, Part 4, Step 15</p>

LANGUAGE STANDARDS (CONT.)

Grade 5 Standard	Mixtures and Solutions Module
<p>4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 5 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase.</p> <p>b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., <i>photograph</i>, <i>photosynthesis</i>).</p> <p>c. Consult reference materials both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.</p>	<p>All investigations provide opportunities for students to determine or clarify the meaning of academic and science-specific words and phrases during class discussions and while reading and discussing articles in <i>FOSS Science Resources</i>.</p> <p>Selected examples Inv 2, Part 2, Step 10 Inv 3, Part 1, Step 18; Inv 3, Part 2, Step 19 Inv 3, Part 3, Step 9 Inv 4, Part 2, Step 10 Inv 5, Part 2, Step 16</p>
<p>5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p>a. Interpret figurative language, including similes and metaphors, in context.</p> <p>b. Recognize and explain the meaning of common idioms, adages, and proverbs.</p> <p>c. Use the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.</p>	<p>Students learn the word relationships (e.g., concept maps) and nuances of certain words that have a specific meaning in science, such as mixture, separate, screen, filter, solution, dissolve, solvent, solute, mass, evaporation, crystal, criteria, constraints, extract, model, construct, siphon, melt, concentrated, dilute, volume, dense, saturated, soluble, gas, precipitate, reaction, and products.</p> <p>Selected examples Inv 1, Part 1, Step 22; Inv 1, Part 2, Steps 16, 17 Inv 2, Part 1, Step 11 Inv 3, Part 4, Step 10; Inv 3, Language Extensions Inv 4, Part 3, Step 1; Inv 4, Part 4, Step 2 Inv 5, Part 2, Step 9; Inv 5, Language Extensions</p>
<p>6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., <i>however, although, nevertheless, similarly, moreover, in addition</i>).</p>	<p>All investigations provide opportunities for students to acquire and use academic, and science-specific words and phrases. Science vocabulary words are in bold when they are first introduced to students in <i>FOSS Science Resources</i>. Students also review vocabulary in the Review vocabulary for each part and the Wrap-up section of each investigation. Selected examples Inv 1, Part 1, Steps 3, 9, 18; Inv 1, Part 2, Steps 15, 16; Inv 1, Part 3, Steps 1, 22; Inv 1, Part 4, Steps 13, 19 Inv 2, Part 2, Steps 8, 10, 13; Inv 2, Part 3, Steps 10, 12 Inv 3, Part 1, Steps 9, 13; Inv 3, Part 2, Steps 1, 15, 19; Inv 3, Part 4, Steps 1, 7, 8; Inv 3, Language Extensions. Inv 4, Part 1, Steps 10, 19; Inv 4, Part 2, Steps 10, 11 Inv 4, Part 4, Step 28 Inv 5, Part 1, Steps 1, 2, 14-16; Inv 5, Part 2, Steps 5, 9</p>

Earth and Sun Module	Living Systems Module
<p>All investigations provide opportunities for students to determine or clarify the meaning of academic and science-specific words and phrases during class discussions and while reading and discussing articles in <i>FOSS Science Resources</i>.</p> <p>Selected examples Inv 1, Part 2, Step 20 Inv 3, Part 1, Step 18</p>	<p>All investigations provide opportunities for students to determine or clarify the meaning of academic and science-specific words and phrases during class discussions and while reading and discussing articles in <i>FOSS Science Resources</i>.</p> <p>Selected examples Inv 1, Part 1, Step 11; Inv 1, Part 3, Steps 3, 16 Inv 2, Part 2, Step 9; Inv 2, Part 3, Step 5 Inv 3, Part 1, Step 12; Inv 3, Part 3, Steps 6, 7 Inv 4, Part 1, Step 26</p>
<p>Students learn the word relationships (e.g., concept maps) and nuances of certain words that have a specific meaning in science, such as shadow, day, night, rotation, axis, sunrise, sunset, revolution, orbit, crescent, gibbous, lunar, waning, waxing, solar, planets, compress, pressure, matter, mass, atmosphere, forecasting, temperature, heat, transfer, conduction, dense, absorb, reflect, condensation, vapor, glaciers, and climate.</p> <p>Selected examples Inv 2, Part 4, Step 16 Inv 3, Part 1, Step 15; Inv 3, Part 2, Step 11 Inv 4, Part 1, Steps 20, 21; Inv 4, Language Extension. List the effects of heat</p>	<p>Students learn the word relationships (e.g., concept maps) and nuances of certain words that have a specific meaning in science, such as system, interact, geosphere, atmosphere, hydrosphere, biosphere, ecosystems, food chain, food web, producers, energy, algae, consumers, decomposers, recycle, marine, compost, nutrients, waste, sugar, fungus,, transpiration, vascular, heart, valves, vein, vital capacity, response, instinct, stimulus, and adaptation.</p> <p>Inv 1, Part 1, Step 10; Inv 1, Part 2, Steps 7, 12-16; Inv 1, Part 3, Steps 2, 7; Inv 1, Part 4, Step 15 Inv 2, Part 1, Step 25 Inv 3, Part 1, Steps 12, 37</p>
<p>All investigations provide opportunities for students to acquire and use academic, and science-specific words and phrases. Science vocabulary words are in bold when they are first introduced to students in <i>FOSS Science Resources</i>. Students also review the vocabulary in the Review vocabulary section for each part and the Wrap-up section of each investigation. Selected examples Inv 1, Part 1, Step 14; Inv 1, Part 3, Steps 8, 9, 19, 21, 22 Inv 2, Part 4, Steps 14, 15, 16, 30; Inv 2, Part 5, Steps 3, 10 Inv 3, Part 1, Steps 10, 14, 15; Inv 3, Part 2, Steps 1, 4, 9 Inv 3, Part 3, Steps 3, 5, 6, 14 Inv 4, Part 1, Steps 1, 2, 5, 6, 17, 18-20; Inv 4, Part 2, Step 9 Inv 4, Part 3, Steps 1, 19; Inv 4, Part 4, Steps 3, 21, 23 Inv 5, Steps 1, 5, 16, 17; Inv 5, Part 2, Steps 6, 7; Inv 5, Part 3, Steps 18, 27; Inv 5, Part 4, Steps 3, 11, 15</p>	<p>All investigations provide opportunities for students to acquire and use academic, and science-specific words and phrases. Science vocabulary words are in bold when they are first introduced in <i>FOSS Science Resources</i>. Students also review the vocabulary in the Review section for each part and the Wrap-up section of each investigation. Selected examples Inv 1, Part 1, Steps 1, 4, 6, 8; Inv 1, Part 2, Steps 3, 7, 9, 12-16, 27; Inv 1, Part 3, Steps 1, 3, 4, 11; Inv 1, Part 4, Steps 2, 4, 13 Inv 2, Part 1, Steps 2, 3, 15, 21, 25; Inv 2, Part 3, Step 14 Inv 3, Part 1, Steps 8, 9, 29, 37; Inv 3, Part 2, Steps 3, 5, 15; Inv 3, Part 3, Steps 3, 6, Inv 4, Part 1, Steps 1, 3, 4, 23, 25; Inv 4, Part 2, Steps 12, Inv 4, Part 3, Steps 1, 6</p>

