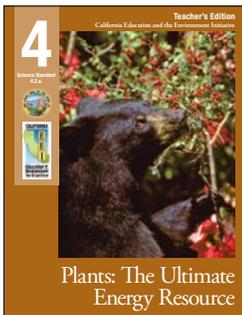




TEACH COMMON CORE STANDARDS WITH THE EEI CURRICULUM

Created with your needs in mind, this document shows the correlation between the EEI Curriculum and the California Common Core State Standards. By teaching the EEI unit lessons in your classroom, you will be simultaneously addressing the Common Core standards depicted in this guide.

4.2.a.—Plants: The Ultimate Energy Resource



In this unit, students learn that plants are the primary source of matter and energy entering most food chains. They will explore California’s agricultural industry, the role of plants in food chains, and the needs of all living things. Students learn that all organisms, including people, consume energy and matter and that natural systems are the ultimate source of those resources. They will investigate the food chain in “The Chain Game” by following a chain to discover that plants are the primary source of energy for living things. Students will further investigate the source of energy for their daily activity, taking an in depth look at their lives.

		RI.4.1	RI.4.2	RI.4.3	RI.4.4	RI.4.6	RI.4.7	RI.4.8	RI.4.9	RI.4.10	W.4.1	W.4.2	W.4.4	W.4.8	SL.4.1	SL.4.2	SL.4.4	SL.4.5	L.4.2	L.4.3	L.4.4	L.4.6	
LESSONS	California Connections	✓	✓	✓	✓		✓	✓		✓				✓	✓	✓							
	1	✓			✓		✓		✓	✓		✓		✓		✓						✓	✓
	2	✓		✓	✓	✓	✓		✓			✓		✓	✓						✓	✓	
	3				✓							✓			✓		✓				✓	✓	
	4				✓		✓					✓		✓	✓					✓	✓	✓	
	5	✓	✓	✓	✓	✓	✓					✓										✓	
	Traditional Assessment											✓	✓										
Alternative Assessment													✓					✓					

COMMON CORE STANDARDS

Note: For your reference, the list of California Common Core State Standards abbreviations is on the following page.

Using the EEI-Common Core Correlation Matrix

The matrix on the front page identifies a number of Common Core standards that are supported by this EEI unit. However, the check marks in the matrix do not necessarily signify that the Common Core standards checked will be taught to mastery by using this EEI unit alone. Teachers are encouraged to select which Common Core standards they wish to emphasize, rather than teaching to every indicated standard. By spending more time on selected standards, students will move toward greater Common Core proficiency in comprehension, critical thinking and making reasoned arguments from evidence. Teaching this EEI unit will provide opportunities for teachers to implement the shift in instructional practice necessary for full Common Core implementation.

California Common Core State Standards Abbreviations

- **CCSS:** California Common Core State Standards
- **L:** Language Standards
- **RI:** Reading Standards for Informational Text
- **SL:** Speaking and Listening Standards
- **W:** Writing Standards

Note: Since each Common Core standard includes a breadth of skills, in this correlation, the portion of the standard description that is featured in the Common Core Standards and Applications is cited, using “...” to indicate omitted phrases. For a list of the complete standard descriptions, please see the Common Core Reference Pages located on pages 20–21 of this document.

A Note about Common Core Speaking and Listening Standards

Many of the EEI units provide various learning structures, materials, and groupings that lead toward students working in pairs or small groups to discuss concepts and ideas. This supports the skill in Speaking and Listening Standard 1 “Participate effectively in a range of collaborative discussions (one-on-one, groups...) with diverse partners.” With prior instruction in collaborative discussion techniques, students can be placed in pairs or small groups to discuss the lesson topics. To aid in teacher planning, the lessons are listed below along with their learning structures for whole class, pairs/partners, and/or small groups:

- **Lesson 1:** Whole class, partners
- **Lesson 2:** Whole class, 3 small groups
- **Lesson 3:** Whole class, small groups of 4
- **Lesson 4:** Whole class, partners (optional)
- **Lesson 5:** Whole class, individual

National Geographic Resources

- **Natural Regions** wall map (Lesson 1)

Unit Assessment Options

Assessments	Common Core Standards and Applications
Traditional Assessment	
<p>Students use words from a word bank to fill in blanks in sentences, answer multiple choice questions, write sentences answers to questions, and write two paragraphs which give explanations or descriptions.</p>	<p>W.4.1b: Provide reasons that are supported by facts and details.</p> <p>W.4.2: Write informative/explanatory texts to examine a topic or convey ideas and information clearly.</p>
Alternative Assessment	
<p>California Agriculture Brochure has students recall the commodities they studied as the basis for creating a brochure to “promote” the importance of plants.</p>	<p>SL.4.5: Add audio recordings and visual displays to presentations when appropriate...</p> <p>W.4.4: Produce clear and coherent writing...in which the development and organization are appropriate to task, purpose, and audience...</p> <p>Suggestion: <i>Brochures can be constructed manually or digitally.</i></p>

Lesson 1: California's Cash Crops

Students read about the prominent role of agriculture in the state's economy and our local food supply, and identify specific commodities produced by California's farms and ranches. Students explore the dependence of agriculture on "ecosystem services" from natural systems.



Procedures	Common Core Standards and Applications
Vocabulary Development	
<p>Use the Dictionary and the vocabulary Word Wall Cards to introduce new words to students as appropriate. These documents are provided separately.</p> <p>Tip: Word Wall Cards may be used at the beginning, as the words come up in the lesson, or as a review at the end.</p> <p>Tip: If Dictionary needs to be reused from year to year, students should not write in them.</p>	<p>L.4.4c: Consult reference materials...to...determine or clarify the precise meaning of key words and phrases...</p> <p>RI.4.4: Determine the meaning of general academic and domain-specific words or phrases in a text...</p>

Session 1

Use this correlation in place of the **Procedures** on page 32 of the Teacher's Edition.

Procedures	Common Core Standards and Applications
Step 1	
<p>Ask students to name some of their favorite foods. Make a quick list of those foods on the board. Discuss why those foods are their "favorites." Tell students that today they are going to learn about from where foods come.</p>	n/a
Step 2	
<p>Distribute a Student Edition to each student. Tell students to turn to California Connections: California's Green Gold (Student Edition, pages 2–5). Read aloud the article as a class. (Note: If any of the foods on the board are mentioned in the article, you may want to mark them on the board in some way.)</p>	RI.4.10: ...read and comprehend informational texts, including...science...
Step 3	

Procedures	Common Core Standards and Applications
<p>Distribute a Student Workbook to each student. Tell students to turn to California Commodities (Student Workbook, pages 2–4). Project California’s Agricultural Income, 2007 (Visual Aid #1) to assist students in completing Part 1 of California Commodities.</p> <p>Tip: If Student Workbooks need to be reused from year to year, students should not write in them. Some strategies teachers use to preserve the workbooks are:</p> <ul style="list-style-type: none"> ■ Have students use binder paper or other lined or unlined paper ■ Have students use a sheet protector over the page and write with a whiteboard marker ■ Do together as a class on a projector or chart paper ■ Project the digital fill-in version and do together as a class ■ Students use digital devices to fill in the digital version found on the website. ■ Make student copies when necessary 	<p>RI.4.7: Interpret information presented visually, orally, or quantitatively...explain how the information contributes to an understanding of the text...</p>

Step 4	
<p>Ask students if any of their favorite foods (listed on the board) might be grown or raised in California. (<i>Answers will vary depending on what foods are listed on the board.</i>) Ask students how they might find out from where their favorite foods come. (<i>Look on the labels, read the packages, ask the farmers, ask the people at the stores where the food is sold</i>)</p> <p>Tell students that they will explore one famous California food (almonds) in the next class session.</p> <p>Gather Student Editions.</p> <p>Collect Student Workbooks and use California Commodities for assessment.</p>	<p>L.4.4b: Use...roots as clues to the meaning of a word...</p> <p>L.4.6: ...use accurately...academic and domain-specific words and phrases...that are basic to a particular topic...</p> <p>Suggestion: Discuss the two words on VA #1 agriculture and floriculture, possibly bring in other words with similar bases (<i>horticulture, viniculture, aviculture</i>). Have students find the similarities in the words (<i>culture is found in all of the words</i>) and define the root word at the beginning.</p>

Session 2

Use this correlation in place of the **Procedures** on pages 33–34 of the Teacher’s Edition.

Procedures	Common Core Standards and Applications
Step 1	
<p>Write the word “almonds” on the board and ask students what they learned about almonds in the last session. (<i>They are grown in California; people brought them from Spain; they need bees to pollinate them.</i>) Explain to students that they will create a word web about almonds, using the article they read in the last session.</p>	<p>RI.4.1: Refer to details and examples in a text when explaining what the text says explicitly...</p> <p>Suggestion: Pass out the California Connections article again for them to refer to.</p> <p>W.4.8: Recall relevant information...</p>

Procedures	Common Core Standards and Applications
Step 2	
<p>Draw students' attention to the Central Valley on the Natural Regions wall map. Point to the Central Valley and explain that the Central Valley is made up of the Sacramento Valley in the north and the San Joaquin Valley in the south. Redistribute a Student Edition to each student and give each a sheet of drawing paper. Tell students to turn to California Connections: California's Green Gold (Student Edition, pages 2–5).</p> <p>Using the sample word web below as your guide, show students how to begin their web by writing "almonds" in a box (or circle) in the center of the page. Draw several lines radiating from the center to show that there will be many facts about almonds to add to the web. Give students a few components of the web to get started, and to demonstrate how facts are related. For example, "grown in Central Valley" is further explained with "Sacramento Valley and San Joaquin Valley," and "problem in 2006" also connects with "grown in Central Valley." Help students include any information about almonds from the article, for example, from where almonds originally came, which states produce them, where they are grown in California, what they need in order to reproduce, the type of climate they need, and problems farmers have growing them.</p>	<p>RI.4.1: Refer to details and examples in a text when explaining what the text says explicitly...</p> <p>RI.4.7: Interpret information presented visually...explain how the information contributes to an understanding...</p> <p>W.4.8: Recall relevant information...gather relevant information from print...categorize information...</p>
Step 3	
<p>Ask students to locate the term "pollination" in the article and ask, "Why is pollination important to almonds? How do farmers depend on pollination?" (<i>Almost all of the world's flowering plants need pollination to help them make seeds and fruits. Many of our foods and medicines come from plants pollinated by wind, insects, or other animals.</i>)</p> <p>Explain to students that pollination is something that happens in nature and that people count on. Ask students if they can think of any other things that happen in nature (other natural processes) that help people. (<i>Water cycle, plant reproduction, decomposition</i>) Tell students that one way to think about these natural process that people depend on is to think of them as "services." Explain that these "ecosystem services" make it possible for people to breathe clean air, to drink clean water, to get rid of waste, to have food to eat, and to rely on other things needed each day to survive.</p>	<p>RI.4.1: Refer to details...in a text...when drawing inferences from the text.</p> <p>RI.4.9: Integrate information from two texts...in order to write or speak about the subject knowledgeably.</p> <p>Suggestion: <i>If necessary, refer to previous lessons on other natural processes to help support objective.</i></p>

Procedures	Common Core Standards and Applications
Step 4	
<p>Explain that ecosystem services, such as pollination and the water cycle, make it possible to produce agricultural goods. Project Ecosystem Services: Pollinating Plants, Ecosystem Services: Decomposition, and Ecosystem Services: Spreading Seeds (Visual Aids #2–4) one at a time, and, share with students three examples of ecosystem services on which farmers and ranchers depend:</p> <ul style="list-style-type: none"> ■ Pollinating plants: Honey bees and other insects pollinate crops and wild plants. Pollination makes it possible for plants to produce seeds. Farmers depend on pollination to grow fruits, nuts, flowers, and other crops. ■ Decomposition: Decomposing waste, like fallen leaves and other decaying matter, returns nutrients to the soil. Farmers need the nutrients in the soil to grow their crops. Natural habitat needs these nutrients to help native plants grow. ■ Spreading seeds: Wind, water, and animals help to spread seeds around so they can sprout and grow. 	<p>SL.4.2: Paraphrase portions of...information presented in diverse and media formats...</p> <p>W.4.8: Recall relevant information...from print and digital sources; take notes, paraphrase...information...</p> <p>Suggestion: Have students recall/paraphrase information from the Visual Aids #2–4. They can do this whole class or with a partner, throughout the lesson or at the end.</p>
Step 5	
<p>Project Other Ecosystem Services (Visual Aids #5). Briefly discuss each of the ecosystem services illustrated in the images:</p> <ul style="list-style-type: none"> ■ Controlling erosion: roots of grasses and other plants hold soil along stream and river banks in place. ■ Creating soils: decomposition, erosion, and weathering create new soil so plants can grow. ■ Providing places for people to play: rivers, mountains, beaches and other places of natural beauty. ■ Producing food and oxygen: green plants converting sunlight into energy and oxygen for other living things. ■ Providing shade and shelter: large trees shade people from the Sun’ harmful rays and provide shelter for animals that play a role in food chains. 	<p>SL.4.2: Paraphrase portions of...information presented in diverse media formats...</p> <p>W.4.8: Recall relevant information...from print and digital sources; take notes, paraphrase...information...</p> <p>Suggestion: Have students recall/paraphrase information from the Visual Aid #5. They can do this whole class or with a partner, throughout the lesson or at the end.</p>
Step 6	
<p>Redistribute a Student Workbook to each student. Tell them to turn to California Commodities (Student Workbook, pages 2–4). Read aloud and have students complete answers for the questions in “Part 2” in class, if there is time, or as homework.</p> <p>Gather students’ word webs from Step 1.</p> <p>Collect Student Workbooks and use California Commodities for assessment.</p>	<p>W.4.2d: Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>W.4.8: Recall relevant information from...print and digital sources...</p>

Lesson 2: Energy for Survival

Students explore living things and nonliving things found in their classroom and in three California ecosystems. They pay particular attention to how plants, animals, and people use and obtain energy. They use this information to summarize, in writing, how living things survive and function.



Use this correlation in place of the **Procedures** on pages 50–51 of the Teacher’s Edition.

Procedures	Common Core Standards and Applications
Vocabulary Development	
<p>Use the Dictionary and the vocabulary Word Wall Cards to introduce new words to students as appropriate.</p>	<p>L.4.4c: Consult reference materials...to...determine or clarify the precise meaning of key words and phrases...</p> <p>RI.4.4: Determine the meaning of general academic and domain-specific words or phrases in a text...</p>
Step 1	
<p>Ask students to name some organisms. (<i>Eagle, sequoia tree, human, salmon, cactus</i>)</p> <p>Explain that living things must meet certain needs in order to survive. Ask students to recall some of the basic needs of plants and animals. (<i>Plants need light, water, nutrients, and carbon dioxide; animals need food, water, oxygen, and a place to live.</i>) Remind students that energy comes from the Sun to Earth in the form of light, and that the Sun is the primary source of energy on Earth. Also review that people are also animals and that we have needs essential to our survival too.</p>	<p>W.4.8: Recall relevant information...</p>
Step 2	
<p>Project Classroom Inventory (Visual Aid #6). Ask students to identify two living things and two nonliving things in the classroom. Record their suggestions in the “Things in the Classroom” column of the Classroom Inventory. (<i>Listed items might include teacher, fish, plant, paper, desk, pencil, and book.</i>)</p> <p>As a group, indicate whether each item is living or nonliving by completing the “Living?” column on the chart with a “yes” or “no.”</p>	<p>W.4.8: Recall relevant information...and categorize information...</p>

Procedures	Common Core Standards and Applications
Step 3	
<p>Elicit suggestions for the “What it Does” column and record several suggestions for each item. For each item listed, prompt students by asking the following questions:</p> <ul style="list-style-type: none"> ■ What does a student do during the day? (<i>Runs, jumps, eats, sleeps, plays, and learns</i>) ■ What does a teacher do during the day? (<i>Talks, walks, eats, teaches</i>) ■ What does a book do during the day? (<i>Nothing. Note that while a book may be read, it is the person that is active; the book itself does not “do” anything.</i>) ■ What patterns do you notice? (<i>Living things do things; nonliving things do not.</i>) <p>Point out that some activities are obvious—like running, eating, talking, and walking, but others are not as apparent even though they are happening all the time. These activities include things like breathing, growing, digesting, and thinking.</p>	n/a
Step 4	
<p>For each listing, ask, “What does this ‘thing’ need to survive?” Record students’ suggestions in the “Survival Needs” column. (<i>Plants need sunlight, water; carbon dioxide, and nutrients; animals [including people] need food, water, oxygen, and shelter; nonliving things have no survival needs.</i>)</p>	W.4.8: ...gather relevant information...and categorize information...
Step 5	
<p>Summarize and reinforce that organisms must have certain things to survive. Remind students that plants need sunlight, water, carbon dioxide, and nutrients. Ask, “Where do plants get the things they need?” (<i>Plants get light from the Sun, water from the rainfall and soil, carbon dioxide from the air, and nutrients from the soil. Natural systems supply their needs.</i>) Remind students that animals need food, water, oxygen, and shelter. Ask, “Where do animals get the things they need to survive?” (<i>Animals get food from plants and other animals, water from lakes, rivers, and rainfall, oxygen from the air, and shelter from plants and other parts of their habitats. Natural systems supply their needs.</i>)</p> <p>Point out that people’s needs are the same as animals’ needs, but humans have more flexibility in how we meet those needs. We can also get water from deep underground, and we can manufacture building materials for shelter. Ask students:</p> <ul style="list-style-type: none"> ■ From where does our food come? (<i>Plants and animals; if students say “refrigerator,” “grocery store,” or “cafeteria,” ask where grocery stores and cafeterias get the food.</i>) ■ Why do we need food? (<i>It provides us with vitamins and minerals, building blocks for body repair and growth, energy for activities, including breathing, sleeping, and thinking.</i>) 	<p>RI.4.1: Refer to details and examples...when drawing inferences from the text.</p> <p>RI.4.9: Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.</p> <p>Suggestion: Include a visual from the internet on the food pyramid.</p> <p>W.4.8: ...gather relevant information...and categorize information...</p>

Procedures	Common Core Standards and Applications
Step 6	
<p>Explain that energy “powers” plants and animals, and gives them the ability to do “work” (move, grow, reproduce). Energy is required to participate in all of the activities listed on the Classroom Inventory.</p> <p>Ask students why the living things on the inventory need energy. (<i>To participate in activities, including things we choose to do like playing, using the computer, and studying, as well as things our bodies do automatically, like breathing and growing.</i>) Ask students if the nonliving things on the inventory need energy. (<i>No</i>) Point out that living things require chemical or food energy, which plants make using energy from the Sun and animals (including people) get by eating plants or other animals.</p>	<p>W.4.8: Recall relevant information from experiences...take notes, paraphrase, and categorize information...</p>
Step 7	
<p>Divide the class into thirds and have the students in each group sit together. Redistribute a Student Workbook to each student. Tell them to turn to Meeting Survival Needs Inventory (Student Workbook, page 5). Give each group one of the three posters: Freshwater Streams, Mojave Desert, or North Coastal Forests. Redistribute a Student Edition to each student. Tell each group to turn to the section from Ecosystem Descriptions (Student Edition, pages 6–8) which corresponds with the poster their group was given.</p> <p>Ask groups to read about their ecosystem and examine the poster to identify as many of the living and nonliving things within the ecosystem as possible. Tell students to record four of the items from the poster on their Meeting Survival Needs Inventory. At least one item should be a nonliving thing. (<i>Note: tell students they do not need to be specific with names. For example, “fish” will suffice for “cutthroat trout.”</i>) Give the groups five minutes to complete this task.</p> <p>When time is up, collect the posters and display all three of them for the class to see. Have students in each group share the living and nonliving things they listed on their copies of Meeting Survival Needs Inventory. (<i>Note: Answer Keys and Sample Answers for Meeting Survival Needs Inventory are provided on pages 55–57.</i>)</p>	<p>RI.4.1: Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.</p> <p>RI.4.7: Interpret information presented visually, orally, or quantitatively...and explain how the information contributes to an understanding of the text in which it appears.</p> <p>SL.4.1: Engage effectively in a range of collaborative discussions...</p> <p>d) Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.</p> <p>W.4.8:...gather relevant information from print and digital sources; take notes, paraphrase, and categorize information...</p>

Procedures	Common Core Standards and Applications
Step 8	
<p>Ask students, “How do the things you listed meet their survival needs? Where do they get what they need?” <i>(From the natural systems in which they live.)</i> Ask the following summary questions:</p> <ul style="list-style-type: none"> ■ Energy: What are some general differences between living and nonliving things? <i>(Living things need energy to survive; nonliving things do not need energy to survive; living things gather energy; nonliving things do not.)</i> ■ Survival needs: What are some similarities between humans and other organisms? <i>(Both need food, water, air, shelter, and space; both must have energy to fuel their life processes; natural systems supply the needs for both.)</i> ■ Survival needs: What are some differences between humans and other organisms? <i>(Humans have more options for meeting their needs; they can purchase things from stores, where they are readily available. Other living things must find the things they need in the natural systems where they live.)</i> 	<p>RI.4.3: Explain events, procedures, ideas, or concepts in a... scientific...text...</p> <p>RI.4.6: Compare and contrast...the...topic; describe the differences in focus and information provided.</p>
Step 9	
<p>Tell students to turn to Energy for Survival (Student Workbook, page 6). Review the instructions and have students respond to the questions in class or for homework. Students may use their completed Meeting Survival Needs Inventory to help them.</p> <p>Gather Student Editions.</p> <p>Collect Student Workbooks and use Energy for Survival for assessment.</p>	<p>L.4.3a: Choose words and phrases to convey ideas precisely.*</p> <p>W.4.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <p>b) Develop the topic with facts, definitions, concrete details... or other information and examples related to the topic.</p>

Lesson 3: The Chain Game

Students participate in a food chain card game to learn that plants are the primary source of energy for living things. Focused class discussions stress that not all the plant energy is available to the animal that eats it.



Use this correlation in place of the **Procedures** on pages 66–67 of the Teacher’s Edition.

Procedures	Common Core Standards and Applications
Vocabulary Development	
Use the Dictionary and the vocabulary Word Wall Cards to introduce new words to students as appropriate.	<p>L.4.4c: Consult reference materials...to...determine or clarify the precise meaning of key words and phrases...</p> <p>RI.4.4: Determine the meaning of general academic and domain-specific words or phrases in a text...</p>
Step 1	
Briefly review the concepts covered in Lesson 2. Emphasize that living things require energy for life functions, such as breathing, digestion, circulation, and reproduction.	<p>SL.4.1c: ...respond to specific questions to clarify... information, and make comments that contribute to the discussion and link to the remarks of others.</p> <p>Suggestion: Have students pair share their review and call on 2–3 non-volunteers to give a few key details.</p>
Step 2	
Write the word “chain” on the board. Ask students to define and describe a chain. (<i>A series of linked items; things that are connected.</i>) Next, add the word “food” so the board reads “food chain.” Ask students what they think a food chain represents? (<i>It shows the chain of feeding among organisms. It shows how energy moves from one organism to another in the form of food.</i>)	n/a
Step 3	
Write this sample food chain on the board: leaf → deer → mountain lion. Explain that these words show a food chain and ask students to describe what it represents. (<i>It is a food chain. The leaf is eaten by the deer; the deer is eaten by the mountain lion.</i>) Point out the arrow and explain that it points from the “primary” source of food (the first thing to be consumed in a food chain) to the next thing that eats it, and so on. The arrows show the direction that the energy is flowing. Ask these questions to further explore the flow of energy through the food chain: <ul style="list-style-type: none"> ■ Where does the leaf get its energy? (<i>It converts energy from the Sun through the process of photosynthesis.</i>) ■ Where does the deer get its energy? (<i>From eating the leaves</i>) ■ Where does the mountain lion get its energy? (<i>From eating the deer</i>) 	n/a

Procedures	Common Core Standards and Applications
Step 4	
<p>Organize students into groups of four and give each group a complete set of Chain Game (Information Cards #1–24). Redistribute a Student Edition to each student. Tell them to turn to Chain Game Rules (Student Edition, pages 9–10). Review the game rules with the students. (<i>Note: Each group will need their own space to work, as group members will be working off the same chains.</i>) During their turns, players draw one card and place it on their group’s food chains. They may add the card to the beginning or end of any existing chain, create a new chain, or combine existing chains by stacking cards as a unit at the beginning, or end of another chain. Cards may not be placed between the cards of an existing chain.</p> <p>During the first round, students use the shared chains in the central game space. They may not show their drawn card to anyone else in their group, they must decide how to play it independently.</p> <p>Continue play until all cards are used. Have each group figure out its collective score using these point values: 0 points for each single card; 1 point for each two-link chain; 2 points for each three-link chain; 4 points for each four-link chain, and 7 points for a five-link chain. Record the scores on the board.</p> <p>Have students shuffle the cards and begin again, rotating clockwise to a new starting player. During the second round, allow students to consult with one another and work together to figure out how to play each card drawn. They should try to make the longest chains possible and improve on their group score from the first round. Recalculate scores and compare them to the first round. Ask whether groups were able to increase their scores. Discuss reasons why their scores changed.</p>	<p>SL.4.1c: ...respond to...information, and make comments that contribute to the discussion and link to the remarks of others.</p>
Step 5	
<p>Using information from the game cards, have a few students write sample food chains on the board. Explain that the Sun provides an enormous amount of energy to Earth. However, only plants are able to convert this energy to a usable form. Some of the energy is used by the plants for their own functions, and the remaining energy is stored up inside the plant. When another organism eats the plant, that organism gets the energy that the plant had stored.</p> <p>Write this food chain on the board: “plants → insects → bird → hawk.” Use this example to address these questions:</p> <ul style="list-style-type: none"> ■ What kind of organism begins most food chains? (<i>Most food chains begin with plants.</i>) ■ In this food chain, does the hawk eat the plants? (<i>No</i>) ■ How does the hawk get from the plants? (<i>The hawk eats a bird, which ate insects, which ate plants.</i>) <p>Gather Student Editions and information cards.</p>	<p>SL.4.4: ...recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas...</p> <p>W.4.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <p>Suggestion: <i>Have each student individually or in pairs write a sample food chain and discuss the questions, or have them write about it.</i></p>

Procedures	Common Core Standards and Applications
Step 6	
<p>Redistribute a Student Workbook to each student. Tell them to turn to Energy Quiz (Student Workbook, Pages 7–8) Have students complete the quiz individually and finish as homework, if necessary.</p> <p>Collect Student Workbooks and use Energy Quiz for assessment.</p>	<p>L.4.3a: Choose words and phrases to convey ideas precisely.*</p> <p>W.4.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <p>b) Develop the topic with facts, definitions, concrete details... or other information and examples related to the topic.</p>

Lesson 4: Energy: The Source

Before the lesson begins, students record their activities and food intake for a day. They identify the source of energy required to perform daily activities and trace the origin of food items back to the natural systems in which they were produced.



Advanced Preparation Note

(Note: The first step in this lesson must be completed one to three days before instruction begins.)

One to three days before starting the lesson, have students take home the **Daily Record** (Student Workbook, page 9). For one day, have students record the general activities in which they participate (wake up, get dressed, walk to school, study, recess, lunch, and so on), the start times of those activities, and all foods they eat during the day. Collect and review the completed records before you begin this lesson. (Note: An Answer Key and Sample Answers for **Daily Record** are provided on page 91.)

Use this correlation in place of the **Procedures** on pages 86–87 of the Teacher’s Edition.

Procedures	Common Core Standards and Applications
Vocabulary Development	
Use the Dictionary and the vocabulary Word Wall Cards to introduce new words to students as appropriate.	<p>L.4.4c: Consult reference materials...to...determine or clarify the precise meaning of key words and phrases...</p> <p>RI.4.4: Determine the meaning of general academic and domain-specific words or phrases in a text...</p>
Advanced Preparation Note	
<p>(Note: The first step in this lesson must be completed one to three days before instruction begins.)</p> <p>One to three days before starting the lesson, have students take home the Daily Record (Student Workbook, page 9). For one day, have students record the general activities in which they participate (wake up, get dressed, walk to school, study, recess, lunch, and so on), the start times of those activities, and all foods they eat during the day. Collect and review the completed records before you begin this lesson. (Note: An Answer Key and Sample Answers for Daily Record are provided on page 91.)</p>	<p>L.4.2d: Spell grade-appropriate words correctly, consulting references as needed.</p>
Step 1	
Ask students, “How many of you are taller than you were last year?” “Three years ago?” In order to grow and perform functions, your body requires building materials. Ask, “Where do we get this material?” (From the foods we eat) Point out that the building materials our bodies need to live and grow are supplied by foods that we get from natural systems.	n/a

Procedures	Common Core Standards and Applications
Step 2	
<p>Redistribute students' individual Student Workbooks. Tell them to turn to their completed Daily Record (Student Workbook, page 9) and review it. Ask students:</p> <ul style="list-style-type: none"> ■ Which activities do you think required the most energy? (<i>Running, jumping, walking, playing</i>) ■ At which times of day were you using energy? (<i>All day, although less obvious than some of the activities listed, energy is needed for digestion, breathing, thinking, sleeping, growth, repair, and all other human functions.</i>) ■ Could we survive without energy? (<i>No, we need energy to carry out all functions.</i>) <p>Ask students where they got the energy needed to carry out the activities on their record. (<i>From the foods they ate</i>) Have student volunteers tell the class some of the foods that supplied them with energy on the day they kept their records. Reinforce that the energy they need for their activities and body functions comes from the foods they eat.</p>	<p>W.4.8: Recall relevant information from experiences...</p>
Step 3	
<p>Hold up a piece of bread. Ask students if they know what plants provide the material to make a piece of bread. Project Wheat to Bread (Visual Aid #8–9). Using the images as a guide, review the process used to convert wheat to bread.</p> <p>Ask students, "How do we depend on natural systems to produce wheat for flour?" (<i>Soil in which the wheat grows, water for the wheat plants, pollination so the wheat plant produces seeds, and more are part of the natural system.</i>)</p>	<p>RI.4.7: Interpret information presented visually, orally, or quantitatively...and explain how the information contributes to an understanding of the text in which it appears.</p>
Step 4	
<p>Draw a circle on the board. Tell students to think of the circle as a dinner plate. Draw a hamburger on the plate and, as a group, trace each ingredient back to its origins in a natural system, as illustrated. (<i>Note: If preferred, select one of the foods mentioned in Step 2 rather than a hamburger.</i>)</p> <p>Prompt discussion about the ecosystem goods and ecosystem services that help produce food for humans by asking:</p> <ul style="list-style-type: none"> ■ From where do the ingredients in the hamburger come? (<i>Plants and animals</i>) ■ How do natural systems help plants and animals? (<i>Natural systems provide water, soil, sunlight, and food for plants and animals. Natural processes like pollination and using sunlight to make food make it possible for plants to grow; plants provide food for themselves and for animals.</i>) ■ What are some of the natural resources that make up a hamburger? (<i>Cows, wheat, tomatoes, lettuce</i>) ■ What are some of the ecosystem services that make these goods possible? (<i>Pollination, plants converting the Sun's energy into chemical energy, water cycle, soil formation</i>) 	<p>SL.4.1c: Pose and respond to specific questions to clarify or follow up on information...</p>

Procedures	Common Core Standards and Applications
Step 5	
<p>Ask students to define the term “nutrition.” (<i>The study of health and diet</i>) Tell students that the U.S. Department of Agriculture has identified food groups, and recommended daily requirements for foods that will help people stay healthy by getting the energy and nutrients we need. Project USDA Food Pyramid: 2007 (Visual Aid #10). Reflect on where food items in those food groups come from (<i>plants and animals</i>) and ask students, as they look at the USDA Food Pyramid, where does more of our food come from: animals or plants? (<i>Plants</i>)</p> <p>Explain that everything in the food pyramid can be traced back to the light energy that plants capture from the Sun.</p>	<p>RI.4.4: Determine the meaning of general academic and domain-specific words...</p> <p>RI.4.7: Interpret information presented visually, orally, or quantitatively...and explain how the information contributes to an understanding of the text in which it appears.</p>
Step 6	
<p>Tell students to turn to Food’s Journey (Student Workbook, pages 10–11). Ask students to select three food items (or one food with three ingredients) from their Daily Record and draw them on the “dinner plate.” Have students follow the example to identify the steps that link each food item on their plate to the natural system from which it originates. Also have students respond to the questions on Food’s Journey.</p> <p>Collect Student Workbooks and use Food’s Journey for assessment.</p>	<p>L.4.3a: Choose words and phrases to convey ideas precisely.*</p> <p>W.4.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <p>b) Develop the topic with facts, definitions, concrete details... or other information and examples related to the topic.</p> <p>Suggestion: <i>Have students work in pairs to complete assignment.</i></p>

Lesson 5: Natural Systems: The Source of it All

Students read about how California Indians once used plant resources from the oak woodland to meet their daily needs. They explore similarities in survival needs between early California Indians and today's California residents.



Use this correlation in place of the **Procedures** on page 100 of the Teacher's Edition.

Procedures	Common Core Standards and Applications
Vocabulary Development	
<p>Use the Dictionary and the vocabulary Word Wall Cards to introduce new words to students as appropriate.</p>	<p>L.4.4c: Consult reference materials...to...determine or clarify the precise meaning of key words and phrases...</p> <p>RI.4.4: Determine the meaning of general academic and domain-specific words or phrases in a text...</p>
Step 1	
<p>Read each of the following sentences aloud to students. After each, have students tell you whether they think the statement is "true" or "false."</p> <ul style="list-style-type: none"> ■ California produces many foods for the world. (<i>True</i>) ■ Living things meet their needs by using resources from the natural system. (<i>True</i>) ■ Plants are the source of energy for most food chains in all ecosystems. (<i>True</i>) ■ Humans meet many of their needs by using plant resources. (<i>True</i>) 	n/a
Step 2	
<p>Draw student's attention to the Natural Regions wall map and have students locate the oak woodlands on the wall map. Tell students that there are several species of oak tree that are native to California, and that these oaks were the source of many things that California Indians used in their daily lives.</p> <p>Project Oaks of California (Visual Aids 11–14). Tell students that all four images show present day California oak woodlands. Ask students if they think all of these oak woodlands are located in the same place. (<i>No</i>)</p> <p>Explain that oak woodlands cover nearly one-third of California. They are a major type of plant community in the state. Tell students that many California Indian tribes once lived in, or near, oak woodlands because these ecosystems offered many of the things they needed to survive.</p>	<p>RI.4.7: Interpret information presented visually...and explain how the information contributes to an understanding...</p>

Procedures	Common Core Standards and Applications
Step 3	
<p>Redistribute a Student Edition and students' individual Student Workbooks. Tell them to turn to California Indians' Uses of Plants (Student Edition, pages 11–14). Direct students to read about how California Indians depended on plants. Then, working as a group, they will answer some questions about what they read.</p> <p>When students are done reading, have them turn to Using Plants Then and Now (Student Workbook, pages 12–15). Instruct them to work together to answer questions #1-12 as a group. (<i>Note: Question #13 will be assigned in Step 4.</i>)</p>	<p>RI.4.1: Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.</p> <p>RI.4.2: Determine the main idea of a text and explain how it is supported by key details; summarize the text.</p> <p>RI.4.3: Explain...ideas, or concepts in a ...scientific... text, including what happened and why, based on specific information in the text.</p>
Step 4	
<p>Ask students if their needs today are the same as the needs of early California Indians. (<i>Yes, in some ways. We need food, water, and places to live. But, how we get the things we need is very different.</i>) Ask students from where the resources for their own daily needs come. (<i>Answers will vary, but the common student answer may be "stores."</i>)</p> <p>Remind students that early California Indians survived by using what was available in the ecosystems, like the oak woodlands, around them. It is no longer true today that we get everything we need directly from natural systems. Tell students to turn to the last page of Using Plants Then and Now. Review question #13 and instruct students to complete the question as homework.</p> <p>Gather Student Editions.</p> <p>Collect Student Workbooks and use Using Plants Then and Now for assessment.</p>	<p>RI.4.1: Refer to details and examples...when explaining...and when drawing inferences...</p> <p>RI.4.6: Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.</p> <p>W.4.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p>

California Common Core State Standards Descriptions

Language Standards

- **L.4.2:** Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
 - d) Spell grade-appropriate words correctly, consulting references as needed.
- **L.4.3:** Use knowledge of language and its conventions when writing, speaking, reading, or listening.
 - a) Choose words and phrases to convey ideas precisely.*
- **L.4.4:** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 4 reading and content*, choosing flexibly from a range of strategies.
 - b) Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., *telegraph*, *photograph*, *autograph*).
 - c) Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases **and to identify alternate word choices in all content areas. CA**
- **L.4.6:** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., *quizzed*, *whined*, *stammered*) and that are basic to a particular topic (e.g., *wildlife*, *conservation*, and *endangered* when discussing animal preservation).

Reading Standards for Informational Text

- **RI.4.1:** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- **RI.4.2:** Determine the main idea of a text and explain how it is supported by key details; summarize the text.
- **RI.4.3:** Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- **RI.4.4:** Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*. **(See grade 4 Language standards 4–6 for additional expectations.) CA**
- **RI.4.6:** Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.
- **RI.4.7:** Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
- **RI.4.8:** Explain how an author uses reasons and evidence to support particular points in a text.
- **RI.4.9:** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably
- **RI.4.10:** By the end of year, read and comprehend informational texts, including history-social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.

Speaking and Listening Standards

- **SL.4.1:** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.
 - c) Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
 - d) Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
- **SL.4.2:** Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
- **SL.4.4:** Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

- **SL.4.5:** Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.

Writing Standards

- **W.4.1:** Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
 - b) Provide reasons that are supported by facts and details.
- **W.4.2:** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
 - b) Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
 - d) Use precise language and domain-specific vocabulary to inform about or explain the topic.
- **W.4.4:** Produce clear and coherent writing (**including multiple-paragraph texts**) 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.) **CA**
- **W.4.8:** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes, paraphrase, and categorize information, and provide a list of sources.