

# ENVIRONMENTAL LITERACY CURRICULUM CONNECTIONS

The Next Generation Science Standards (NGSS) are based on the premise that the purpose of learning science is to help students understand the natural world, solve problems, improve their lives and communities, and make the world a better place. Environmental literacy is an essential part of science and is deeply embedded throughout NGSS. We think environmental literacy should be deeply embedded throughout your science curriculum, too! This resource will help you identify the units in your curriculum that emphasize environmental concepts and that provide opportunities where outdoor learning experiences are part of regular classroom routines.

## What is environmental literacy and how is it connected to science teaching and learning?

In this document, environmental literacy is represented by three interconnected categories:

- 1) **Connection to nature:** having a sense of wonder and curiosity, enjoying the physical, social and emotional benefits of being outdoors, making observations and asking questions, building our relationship with the natural world;
- 2) **Understanding natural systems:** figuring out how nature works by carrying out investigations, collecting and analyzing data, constructing explanations, arguing based on evidence; and
- 3) **Community engagement:** communicating ideas, applying knowledge to positive community actions, understanding the socio-political and historical context for longstanding environmental inequities.

Within NGSS, Performance Expectations (PE) at every grade level ask students to **connect to nature**, **understand natural systems** and **apply** that knowledge. For example:

**Kindergarten** (K-ESS3-3) Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

**5th Grade** (5-ESS3-1) Obtain and combine information about ways individual communities use science ideas to protect Earth's resources and environment.

**Middle School** (MS-LS2-4) Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

Emphasizing environmental literacy supports students to develop skills that make them well-rounded, effective leaders in their human and ecological communities.

## WHY DOES IT MATTER?

Environmental literacy leads to more equitable, inclusive, and culturally relevant learning experiences.

- Experiences in the local community with local partners are authentic, place-based and relevant to the lives of learners.
- Community leaders, community-based organizations, and environmental educators can help us understand environmental injustices and ensure that local issues and assets are part of student learning.
- Learning outdoors can be safer, healthier, more engaging than learning indoors.

## How to use this tool

This teaching tool allows teachers, site leaders and instructional leaders, to complement their classroom instructional materials with local and easily accessible, real-world opportunities for their students to more fully understand the world around them.

### Schoolyard Connection

### Field Trip Connection

### EP&C/Environmental Literacy Connections

- Select the appropriate curriculum document(s): FOSS Grades K-8; Amplify Science Grades K-8; SEPUP Grades 6-8; and, Ocean Sciences Sequence, Grades 6-8.
  - Read the environmental literacy curriculum connections (of select modules) organized by grade level and unit, describing meaningful outdoor learning activities for a schoolyard or local field trip destination
    - District office / school sites / or team of teachers may customize this tool, adding location ideas for outdoor learning when teaching the different units and lessons for each school, TK-8, in their district.

## CONNECTING ENVIRONMENTAL LITERACY TO SCIENCE CURRICULUM

Districts don't always have the expertise to effectively, systematically use the outdoors as a classroom from Grades TK-12. We need partners who know the landscape, the natural and human history of the community, and know how to engage students in the world around them.

***Environmental literacy curriculum*** connections in this document:

- support students to better understand natural systems,
- connect students to place, their schoolyard, their community, state and federal national parks; and
- encourage students to understand and create solutions to improve their communities.

## Environmental Literacy Curriculum Connections funded by



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Ten Strands  
Connecting Education, Environment, and Community

Students develop an understanding of what plants and animals need to survive and the relationship between their needs and where they live. Systematic schoolyard investigation of trees over the seasons bring students to a better understanding of the role of trees at school and in their community. Students observe day-to-day changes in weather over the year, as well as the impact weather has on living things.

For more information see the [CA Environmental Principles and Concepts–Grade K](#), and access the [Planning Guide and other state resources](#) in *Teacher Resources on FOSSweb*.

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<b>Schoolyard Connections</b> <i>Embedded in FOSS Investigations*</i>	<b>Additional Schoolyard Extensions</b> <i>Included with Core Curriculum</i>	<b>Field Trip Connections</b> <i>Extensions to FOSS Investigations**</i>	<b>EP&amp;C/Environmental Literacy Connections</b>
<p><b>Investigation 1: Observing Trees</b></p> <p><i>Part 1: Observing Schoolyard Trees</i> Students observe schoolyard trees and identify tree parts.</p> <p>Students look for evidence how animals use the tree as their habitat.</p> <p>Students compare and identify different types of trees and have a discussion.</p> <p><i>Part 5: Adopt Schoolyard Trees</i> Students adopt a tree in the schoolyard and observe, collect, and record data throughout the seasons.</p> <p><i>Part 6: A Tree Comes to Class</i> Students care for a potted tree in the classroom and then go outside to plant it in the schoolyard.</p> <p><b>LOCATION IDEA:</b></p>	<p>Throughout the module, students become naturalists investigating trees in the area. As a class, collect one leaf from each kind of tree and add it to the class scrapbook. Students can also explore trees in their neighborhood, yard, block, local park, etc.</p> <p><b>LOCATION IDEA:</b></p> <p>At home, students survey family members to estimate how many trees are in a local space, and then make an actual count. See Home/School Connection, <i>Investigation 1: Observing Leaves</i>.</p>	<p>Plan a field trip to a park, a botanical garden, or a local walking path. Focus the trip on different kinds of trees and the animals that depend on them. See the FOSSweb Regional Resources for suggestions.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1A, 2A, 2C, 3B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go to the schoolyard, observe trees, and discuss what defines a tree, how trees provide resources and interact with things in the environment.</li> <li>• Students take a class field trip to a pond, lake, marsh, or beach to learn the needs of the animals in that area.</li> <li>• A living tree is planted in the schoolyard; students learn what plants need to grow and how humans sow plants in fields to grow food to eat.</li> <li>• Students construct and observe how a wind sock responds to wind and how people benefit from weather.</li> </ul>

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<p><b>Investigation 2: Observing Leaves</b></p> <p><i>Part 1: Leaf Walk</i> Students observe leaves from different types of trees in the schoolyard.</p> <p><i>Part 3: Comparing Leaves</i> Students find different shapes (heights and widths) of leaves in the schoolyard.</p>	<p>Students go outdoors to extend the schoolyard exploration to collect and observe leaf litter in their neighborhoods.</p> <p><b>LOCATION IDEA:</b></p> <p>At home, students can practice leaf identification. See Home/School Connection, <i>Investigation 2: Observing Leaves</i>.</p>		<p>The active investigations and extensions address EP&amp;C Principles 1A–B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students study leaves and learn about how scientists study trees. They go on a leaf hunt in the schoolyard and sort them using a reference.</li> <li>• Students visit a tree-top laboratory and learn how humans can protect trees as a vital resource.</li> </ul>
<p><b>Investigation 3: Observing Weather</b></p> <p><i>Part 1: Weather Calendar</i> Students observe the weather outside by studying the movement of clouds and the air.</p> <p><i>Part 2: Recording Temperature</i> Students compare the temperatures in the classroom and outdoors. Students use their senses to observe temperature and sunlight outside the classroom. Students use a thermometer to measure temperature outside the classroom.</p> <p><i>Part 3: Wind Direction</i> Students test the effect of wind on wind socks outside.</p>	<p>Students take home the wind socks they made and tested in the schoolyard and observe how wind affects the flow of the streamers in their own neighborhoods.</p> <p>At home, students can make wind chimes with paper cups. See Home/School Connection, <i>Investigation 3: Observing Weather</i>.</p>		<p>The active investigations and extensions address EP&amp;C Principles 1A and 3A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go outside and observe local weather and record daily observations</li> </ul>

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<p><b>Investigation 4: Trees Through the Seasons</b></p> <p><i>Part 1: Fall: What Comes from Trees</i> Students collect things they find from trees in the schoolyard.</p> <p><i>Part 2: Fall: Food from Trees</i> Students look for seeds, fruit, cones, and leaves on trees in the schoolyard.</p> <p><i>Part 3: Fall: Visiting Adopted Trees</i> Students observe leaves on twigs in the schoolyard.</p> <p><i>Part 4: Winter: Evergreen Hunt</i> Students compare the leaves of trees in their schoolyard to evergreen leaf samples.</p> <p><i>Part 6: Winter: Visiting Adopted Trees</i> Students observe how their adopted tree changed through the seasons.</p> <p><i>Part 8: Spring: Bark Hunt</i> Students try to match trees in the schoolyard with pictures of tree bark.</p> <p><i>Part 9: Spring: Visiting Adopted Trees</i> Students visit their adopted trees in the spring and look for flowering twigs.</p>	<p>Following the schoolyard search for things that come from trees through the seasons, students go outdoors to observe seed showers, compare cones from different kinds of trees, and examine signs of life in trees in their local neighborhood.</p> <div data-bbox="569 565 968 630" style="background-color: #e0e0e0; padding: 5px; margin-top: 10px;"> <p><b>LOCATION IDEA:</b></p> </div>		<p>The active investigations and extensions address EP&amp;C Principles 1A, 2A, and 3A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go to the schoolyard and collect things that come from trees.</li> <li>• Students go to the schoolyard to search the schoolyard for seeds from trees and think about fruit development and taste food that comes from trees.</li> <li>• Students go to the schoolyard and visit their adopted trees throughout the year. They mark twigs in the fall and observe how trees change through the seasons.</li> <li>• Students go on a virtual field trip to the seashore with naturalists who study the mangrove and underwater grass bed ecosystem.</li> </ul>

\* These schoolyard connections are an integral part of the program investigations.

\*\* These field trip connections are included as program extensions.

Students study natural resources and properties of materials and how those properties determine their use—wood, paper, and fabric. Schoolyard investigations compare properties of natural and human-made materials.

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<p><b>Investigation 1: Getting to Know Wood</b></p> <p><i>Part 1: Observing Wood</i> Students go on an outdoor walk to find and label things made from wood and then have a sense-making discussion.</p> <p><i>Part 4: Sanding Wood</i> Students go outdoors to sand wood samples and compare with sanding a found stick.</p> <p><b>LOCATION IDEA:</b></p>	<p>Return to the schoolyard and document and sort a collection of different kinds of wood.</p> <p><b>LOCATION IDEA:</b></p> <p>At home, students make a list of items at home that are made of wood (indoors and outdoors). See Home/School Connection, <i>Investigation 1: Observing Leaves</i>.</p>	<p>Visit a lumberyard, construction site, or woodworker’s shop. See <i>Environmental Literacy Extensions</i>.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1A and 2B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go to the schoolyard to make the connection that wood, a renewable resource, comes from trees.</li> <li>• Students go to the schoolyard and change the appearance of a stick of wood with sandpaper just as woodworkers do to make things for human use.</li> <li>• Students investigate five types of wood and explore where wood can be found in their home and school environments. They go to the schoolyard to look for things that are made of wood.</li> </ul>
<p><b>Investigation 2: Getting to Know Paper</b></p> <p><i>Part 3: Paper and Water</i> Students go outdoors and set up their string of flags and students search the schoolyard for paper.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students can continue at home testing how different materials last outdoors in the elements over time.</p>		<p>The active investigations and extensions address EP&amp;C Principles 1A–B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students explore the properties of materials and explore how natural systems interact to affect each other.</li> </ul>

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<p><b>Investigation 3: Getting to Know Fabric</b></p> <p><i>Part 6: Building Structures</i></p> <p>Students go outdoors to investigate water in sunshine and shade. They design and test a structure to keep water cool in sunshine.</p> <p><b>LOCATION IDEA:</b></p>		<p>Visit a farm where materials like wool or cotton are grown.</p> <p>Visit a manufacturer to see how fabric is made.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principle 1A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students visit a farm where sheep shearing takes place or where cotton is grown. Visit a clothing manufacturer to see how fabric is made into clothes or other products.</li> <li>• Students engineer a structure (using wood scraps, paper, fabric, glue, and natural materials) that can be taken to the schoolyard to keep water cool in the sunshine. They also explore how the Sun warms Earth’s surface.</li> </ul>
<p><b>Investigation 4: Getting Things to Move</b></p> <p><i>Part 3: Rolling Outdoors</i></p> <p>Students find slopes in the schoolyard that can be used to set balls in motion. They predict the path of a ball on a slope and test their predictions.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students explore things that roll in their homes or neighborhood. See <i>Home/School Connection, Investigation 4.</i></p>		<p>The active investigations and extensions address EP&amp;C Principle 3B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go outside and investigate the role of gravity in natural systems.</li> </ul>

Students go outdoors to explore weather using simple instruments and observe and monitor change in weather firsthand. They explore the properties of air and observe how the relative position of the Sun in the sky affects air temperature. They also monitor movement of the moon over time. The driving question is: **What is all around us and what do we observe in the sky above us?**

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<p><b>Investigation 1: Exploring Air</b></p> <p><i>Part 2: Parachutes</i></p> <p>Students go outdoors and fly parachutes they make in class while observing their behavior in the air, and compare flying the parachutes indoors vs. outdoors. They observe lateral movement and sometimes parachutes get caught in updrafts</p> <p><b>LOCATION IDEA:</b></p>	<p>Students construct an air cannon and go outside to observe that air has mass and can move. They also go outside and inflate a beach ball with different amounts of air to see the differences in how they bounce.</p> <p>At home, students look for toys that use air. See Home/School Connection, <i>Investigation 1: Exploring Air</i>.</p>		<p>The active investigations and extensions address EP&amp;C Principle 1A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students begin the module by considering what air can do. They learn that air is an invisible mixture of gases and many animals, including humans, need air to breathe.</li> </ul>



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<p><b>Investigation 2: Observing the Sky</b></p> <p><i>Part 1: Weather Calendars</i> Students go outside to observe the air and how it feels, and look for evidence that the air is moving.</p> <p><i>Part 3: Measuring Temperature and Daylight</i> Students go outside to measure the air temperature with a thermometer, observe the position of the Sun in the sky.</p> <p>Students go outside and consider how the Sun’s position appears to change throughout the day.</p> <p><b>LOCATION IDEA:</b></p> <p><i>Part 3: Watching Clouds</i> Students go outside and compare the clouds in the sky to photos in “A Guide to the Sky” reading.</p> <p><i>Part 4: Observing the Moon</i> Students go outside and track the Moon’s path in the sky.</p>	<p>Students can extend the schoolyard activities by going outside and tracking the weather in a weather log. After the data is collected, they observe when the temperature was the highest, when it rained, and so on.</p> <p>At home, students can observe cloud movements, using a “cloud window.” See Home/School Connection, <i>Investigation 2: Observing the Sky</i>.</p>		<p>The active investigations and extensions address EP&amp;C Principle 3A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go outside to observe the weather and collect weather data. They measure temperature and daylight hours and think about what time of the day is the warmest.</li> </ul>

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<p><b>Investigation 3: Wind Explorations</b></p> <p><i>Part 1: Bubbles in the Wind</i> Students go outside their classroom and use bubbles to predict where the wind is moving.</p> <p><b>LOCATION IDEA:</b></p> <p><i>Part 4: Wind Vanes</i> Students go outside their classroom and use wind vanes to determine where the wind is coming from.</p>	<p>Students can build kites or wind chimes and place them in the schoolyard or outside their homes. See Investigation 3 “Science Extensions.”</p> <p>At home, students make whirligigs and hang them outside. See Home/School Connection, <i>Investigation 3: Wind Explorations</i>.</p>	<p>Visit a kite expert or invite them to the schoolyard to discuss their experience with wind.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1A and 2B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• After investigating wind in the schoolyard, students read about natural and human-made resources and how they are used by people</li> <li>• Students investigate wind turbines by reading and discuss how we can use the energy of the wind to generate electricity.</li> </ul>
<p><b>Investigation 4: Looking for Change</b></p>		<p>Students visit a local farm or community garden. They prepare questions to ask the farmers about how the weather, seasons, and daylight length affect processes on the farm positively and negatively.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 3A–B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go outside repeatedly to observe, record and graph weather data over a month.</li> <li>• Students learn how weather, seasons, and daylight affect growing on farms and gardens.</li> </ul>

\* These schoolyard connections are an integral part of the program investigations.

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Students observe firsthand the structures of plants and discover ways to propagate new plants from mature plants (from seeds, bulbs, roots, and stem cuttings). They observe and describe changes that occur as young plants grow, and compare classroom plants to those in the schoolyard.

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<p><b>Investigation 1: Grass and Grain Seeds</b></p> <p><i>Part 4: Variation in Plants and Animals</i></p> <p>Students go outdoors and explore how many different kinds of plants live in an area of the schoolyard.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students can plant radish or other grass seeds in planters or gardens in the schoolyard.</p>	<p>Plan a field trip to a park, a botanical garden, or a local walking path. Focus the trip on different kinds of plants found in the area.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1A and 2A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students transplant classroom plants to a school garden or outdoor planter.</li> <li>• Students go outside to investigate the plants in an area of the schoolyard.</li> </ul>

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<p><b>Investigation 3: Terrariums</b></p> <p><i>Part 2: Animals in the terrariums</i> Students go outdoors to collect materials after learning what animals need to live in a terrarium.</p> <p><b>LOCATION IDEA:</b></p> <p><i>Part 4: Squirrel Behavior</i> Students go outdoors to play a simulation game and explore how the behaviors of different types of squirrels help them survive the winter.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students can make a backyard pitfall trap. They also could observe squirrels in nature. See <i>Science Extensions</i> for more details.</p>	<p>Plan a visit to a local nature to learn more about local plants and animals.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1B-1C and 2B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go to the schoolyard to play a simulation game of how red squirrels and grey squirrels survive throughout the winter.</li> <li>• Students go to the schoolyard to search for and collect small animals to add to their terrarium.</li> <li>• Upon completing the terrarium investigation, locally collected animals can be returned to the schoolyard and plants and soil can be composted.</li> </ul>
<p><b>Investigation 4: Growth and Change</b></p> <p><i>Part 3: Plant and Animal Growth</i> Students go outdoors to adopt a schoolyard plant. They observe this plant throughout the year. They also compare plants in the schoolyard with plants studied in the classroom.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students can plant flower bulbs in the schoolyard or school garden. See <i>Science Extensions</i> for more details.</p> <p><b>LOCATION IDEA:</b></p>	<p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principle 1B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go to the schoolyard and adopt a plant to observe throughout the school year. Students consider the basic needs of the plant and how it could produce offspring.</li> </ul>

Students engage with opportunities to become naturalists and study insects and plants in their classroom, schoolyard, and beyond. The driving question is what is the natural history of some plants and animals in different habitats?

For more information see the [CA Environmental Principles and Concepts–Grade 2](#), and access the [Planning Guide and other state resources](#) in *Teacher Resources on FOSSweb*.

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<p><b>Investigation 1: Mealworms</b></p>	<p>Students look in the schoolyard or their neighborhoods for insects and record where they found it, its behaviors, and its structures.</p> <p><b>LOCATION IDEA:</b></p>		<p>The active investigations and extensions address EP&amp;C Principle 1A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students observe local insects and their structures and behaviors.</li> </ul>
<p><b>Investigation 2: Brassica Seeds</b></p> <p><i>Part 4: Planting Outdoors</i></p> <p>Students go to the schoolyard and search for good locations to grow plants. Students plant marigold seeds and seedlings outdoors and observe them over time. They look for flowers, seeds, and seedpods in the schoolyard.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students go outdoors to extend the schoolyard exploration and look for wild mustard in the schoolyard or in their neighborhoods.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students go to their local market and look for the plants they are growing in class.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principle 1A and 3A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students plant seeds in the schoolyard and observe plant life cycles and discuss how plants get nutrients, make their own food, and capture energy from the Sun.</li> <li>• Students investigate schoolyard flowers and seeds and how humans benefit from them.</li> <li>• Students grow plants from seed in the schoolyard and to conduct a seed search in the schoolyard.</li> </ul>

<b>Schoolyard Connections</b> <i>Embedded in FOSS Investigations*</i>	<b>Additional Schoolyard Extensions</b> <i>Included with Core Curriculum</i>	<b>Field Trip Connections</b> <i>Extensions to FOSS Investigations**</i>	<b>EP&amp;C/Environmental Literacy Connections</b>
<p><b>Investigation 3: Milkweed Bugs</b></p> <p><i>Part 4: Insect Search</i> Students go to the schoolyard and observe and draw insects. They then go to the schoolyard or their neighborhood to look for milkweed bugs.</p> <p><b>LOCATION IDEA:</b></p>	<p>Following the schoolyard activities that are part of the program, students use a simple field guide to identify insects and other animals they find in the schoolyard or neighborhood. See Home/School Connection, <i>Investigation 3: Milkweed Bugs</i>.</p>	<p>The class can take a walk with a naturalist in a natural local site.</p> <p>Students take a field trip to look for milkweed bugs living in the wild.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1A and 3A–B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students search for damage to plants in the schoolyard and consider sources of the damage and how insects are useful and harmful for humans.</li> <li>• Students use a simple field guide to identify insects and other animals in the schoolyard.</li> </ul>
<p><b>Investigation 4: Silkworms</b></p> <p><i>Part 4: Plant Eaters</i> Students go to the schoolyard and look for evidence that insects are eating plants. Students sort leaves based on evidence, and discuss evidence of animals eating the leaf.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students extend the schoolyard investigations by looking around their neighborhoods for evidence that insects or related small animals exist. See Home/School Connection, <i>Investigation 4: Silkworms</i>.</p>	<p>Students visit a natural outdoor area such as a park and explore the insects that live there, and compare them to the insects they found in the schoolyard.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 2A and 2B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go outside to investigate insects and schoolyard plants.</li> <li>• Students research natural ways to keep pests (some insects) from eating plants in a schoolyard garden.</li> </ul>
<p><b>Investigation 5: Butterflies</b></p> <p><i>Part 4: Flower Powder</i> Students go to the schoolyard and look for plants with pollen and collect pollen samples. Students engineer a model pollinator and test them on flowers to search for pollen.</p> <p><b>LOCATION IDEA:</b></p>	<p>Following the schoolyard activities that are part of the program, students go to the schoolyard or their neighborhoods to look for and collect local larvae.</p>	<p>Students visit a botanical garden or nearby natural area that features flowering plants that are pollinated by insects.</p> <p><b>LOCATION IDEA:</b></p>	

\* These schoolyard connections are an integral part of the program investigations.

\*\* These field trip connections are included as program extensions.

Students study the properties of rocks of various sizes and study the components of soil, study the results of weathering and erosion, locate natural sources of water, and determine how to represent the shapes and kinds of land and bodies of water on Earth.

For more information see the [CA Environmental Principles and Concepts–Grade 2](#), and access the [Planning Guide and other state resources](#) in *Teacher Resources on FOSSweb*.

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<p><b>Investigation 1: First Rocks</b></p> <p><i>Part 4: Start a Rock Collection</i></p> <p>Students take a field trip to collect and observe schoolyard rocks. They describe the properties of the various rocks.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students collect a number of different-sized rocks and build rock towers in the schoolyard. See <i>Art Extensions</i> for more information.</p> <p><b>LOCATION IDEA:</b></p> <p>At home, students collect rocks to invent a game. See <i>Home/School Connection for Investigation 1</i>.</p>		

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<p><b>Investigation 3: Using Rocks</b></p> <p><i>Part 1: Rocks in Use</i> Students go outdoors and look for places where earth materials can be found naturally or as building materials</p> <p><b>LOCATION IDEA:</b></p> <p><i>Part 5: Making Bricks</i> Students go outdoors and make adobe clay bricks with a mixture of clay soil, dry grass or weeds, and water. After the bricks dry, they can be used to build a class wall.</p> <p><b>LOCATION IDEA:</b></p>	<p>Ask the grounds manager at the school to help your class design paving stones that can be placed at the edge of a schoolyard garden or to line a pathway.</p> <p><b>LOCATION IDEA:</b></p>	<p>At home, students become field-trip leaders as they take their families on a search for rocks in use. A family member helps record all the places where they see rocks in use. See <i>Home/School Connection for Investigation 3</i>.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1A and 1B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go to the schoolyard to see how people use rock resources, to construct objects and to make useful stuff.</li> <li>• Students design and decorate a paving stone that can be placed at the edge of a schoolyard garden or to line a pathway.</li> <li>• Students make bricks in the schoolyard.</li> </ul>
<p><b>Investigation 4: Soil and Water</b></p> <p><i>Part 2: Local Soil</i> Students go on a schoolyard field trip to collect soil samples and then investigate them.</p> <p><b>LOCATION IDEA:</b></p> <p><i>Part 4: Land and Water</i> Students go out on the schoolyard to look for erosion.</p> <p><b>LOCATION IDEA:</b></p>	<p>At home, students become “soil engineers” as they compare “perc tests” to determine water retention of soil in two locations. See <i>Home/School Connection for Investigation 4</i>.</p>	<p>Explore roadside cuts in the school neighborhood or take a trip to a good local road cut example and examine the layers of soil profiles. Consult local geologists or university departments for support.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 2A and 2B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students investigate where local sources of water can be found.</li> <li>• Students go to the schoolyard to investigate local soils.</li> <li>• Students explore signs of erosion in the schoolyard and their neighborhood and compare a variety of ways to reduce erosion.</li> </ul>



Students observe a diversity of plants and animals and go outdoors to observe organisms and consider how they interact in the schoolyard environment. The driving questions are where do organisms come from, how do they survive, and how are all the different kinds of plants and animals able to continue to exist on Earth?

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<p><b>Investigation 1: Origin of Seeds</b></p> <p><i>Part 4:</i> Students go to the schoolyard to design and apply modifications to seeds and fruits for dispersal by various natural forces. Students search for seeds in the schoolyard and consider how they are adapted for dispersal.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students go outside and drag a sock through a field of weeds and see which local seeds are caught and carried. Students plant the sock and see what grows. See <i>Science Extensions</i> for details.</p> <p>Students search their neighborhood for seeds. See Home/School Connection, <i>Investigation 1: Origin of Seeds</i>.</p>	<p>Students visit a grocery store or invite a local produce person, farmer, or cannery worker to visit the class and provide information on fruit.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principle 1A–B, 2C, 3A, 3C. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go outside to investigate how seeds disperse. They modify seeds to be dispersed in various ways.</li> <li>• Students investigate how water affects seeds over time.</li> <li>• The class conducts a schoolyard environmental improvement project.</li> </ul>
<p><b>Investigation 2: Growing Further</b></p> <p><i>Part 3: Roots and Shoots</i> Students go to the schoolyard to dig up plants and investigate the roots and shoots of various plants. They also compare root structures of different plants and discuss inheritance of characteristics.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students can extend the schoolyard investigations by exploring their schoolyard or neighborhood for plants and observe and illustrate their structures and properties. See Home/School Connection, <i>Investigation 2: Growing Further</i>.</p>		<p>The active investigations and extensions address EP&amp;C Principle 1B–C, 2A–B, 3A, 3C. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students grow seedlings in the schoolyard and consider environmental impacts on plant growth.</li> <li>• Students explore the essential process of pollination in the schoolyard.</li> </ul>

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<p><b>Investigation 3: Meet the Crayfish</b></p> <p><i>Part 4: Comparing Animals</i> Students go outside and search for animals in the schoolyard and compare how they are alike and different.</p> <p><b>LOCATION IDEA:</b></p> <p><i>Part 5: Food Chains</i> Students go outside to investigate food chains by assuming the roles of animals in a food chain.</p> <p><b>LOCATION IDEA:</b></p>		<p>Students can extend the schoolyard investigations by visiting a fish hatchery and explore the process of raising fish to maintain good populations of fish for sport and commercial fishing.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1A, 2D, 5A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students conduct an outdoor simulation and consider how animals depend on other organisms to survive, and explore how energy comes from the Sun.</li> </ul>
<p><b>Investigation 4: Human Body</b></p> <p><i>Part 4: Fingerprints</i> Students go outside and take turns jumping rope to observe which of their body parts are moving.</p> <p><b>LOCATION IDEA:</b></p>	<p>Following the schoolyard activities that are part of the program, students go outside to exercise and keep an exercise journal to record their activity over time.</p>		<p>The active investigations and extensions address EP&amp;C Principles 1A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students jump rope outdoors to observe which parts of the human body move when jumping.</li> </ul>

\* These schoolyard connections are an integral part of the program investigations.

\*\* These field trip connections are included as program extensions.

Students explore the properties of water, the water cycle, and interactions between water and other earth materials. Students learn how humans use water as a natural resource.

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<p><b>Investigation 1: Water Observations</b></p> <p><i>Part 4: Water in Nature</i></p> <p>Students go outdoors to collect small samples of natural materials, including living and dead plant material and earth materials. They put drops of water on the materials to simulate rain and observe what happens.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students take a schoolyard field trip after a rainstorm to identify and observe the effects of flowing water and erosion.</p> <p><b>LOCATION IDEA:</b></p> <p>Consider working to add rainwater harvesting to your schoolyard. See <i>Environmental Literacy Extensions</i> for details.</p> <p><b>LOCATION IDEA:</b></p>		<p>The active investigations and extensions address EP&amp;C Principles 1A and 2A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students explore properties of water and how it interacts with different surfaces in the schoolyard.</li> <li>• Students discuss ways people use water and the benefits of adding a rainwater harvesting system to their schoolyard.</li> </ul>
<p><b>Investigation 2: Hot Water, Cold Water</b></p> <p><i>Part 5: Ice Outdoors</i></p> <p>Students go outdoors and place one ice cube in the sunshine, place a second ice cube in the shade, and bury a third ice cube. They monitor the ice cubes and, by extension, determine the best place for an animal to go to stay warm and to stay cool.</p> <p><b>LOCATION IDEA:</b></p>			<p>The active investigations and extensions address EP&amp;C Principles 1B, 2B, and 3B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students investigate firsthand what happens when water freezes.</li> </ul>

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<p><b>Investigation 3: Weather and Water</b></p> <p><i>Part 1: Measuring Weather</i></p> <p>Students compare weather data that they observe and collect to meteorologists’ forecasts and historical data.</p> <p><b>LOCATION IDEA:</b></p>			<p>The active investigations and extensions address EP&amp;C Principle 3A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students set up an experiment to investigate one part of the water cycle, condensation.</li> <li>• After investigating the drainage/filtration rate of various soils throughout the schoolyard, students read about ways to make drinking water safer.</li> </ul>
<p><b>Investigation 5: Waterworks</b></p> <p><i>Part 2: Water in Soil</i></p> <p>Students test the soil in a number of locations in the schoolyard to find out how long it takes each soil to absorb equal amounts of water.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students can collect soils of different colors and textures from the schoolyard or bring them in after a soil search in the area.</p> <p><b>LOCATION IDEA:</b></p>	<p>Have students find out about the local water supply. Where does it come from? Where is it stored? How is water treated? Then plan a field trip to a local water utility.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1B–C, 2A–B, 3A–C, and 5B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go to the schoolyard to test soil drainage in multiple locations.</li> <li>• Students construct waterwheels outdoors.</li> <li>• Students investigate their local water supply—where it comes from, where it is stored, and how it is treated.</li> </ul>

Students experience soils and rocks and modeling firsthand using tools such as topographic maps and stream tables to study the surface of Earth’s landscape, shape and composition of landforms. The driving questions are: What are Earth’s land surfaces made of and why are landforms not the same everywhere?

For more information see the [CA Environmental Principles and Concepts–Grade 4](#), and access the [Planning Guide and other state resources](#) in *Teacher Resources on FOSSweb*.

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<p><b>Investigation 1: Soils and Weathering</b></p> <p><i>Part 1: Soil Composition</i> Students look for soil around their schoolyard.</p> <p><b>LOCATION IDEA:</b></p> <p><i>Part 4: Schoolyard Soils</i> Students collect and observe different soils from around the schoolyard. They analyze the samples to determine how much humus and rock material are in local soils.</p>	<p>At home, students can find different types of rocks in their neighborhood and test their interaction with acid (vinegar). See Home/School Connection, <i>Investigation 1: Soil and Weathering</i>.</p>	<p>Explore roadside cuts in the school neighborhood or take a trip to a good local road cut example and examine the layers of soil profiles. Consult local geologists or university departments for support.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principle 1C, 3C, and 4A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go to the schoolyard and investigate local soil, growing patterns and how worms affect soil.</li> <li>• Students investigate how chemical weathering affects rocks, how human waste influences pollution, and look for examples of chemical weathering in the schoolyard.</li> </ul>

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<p><b>Investigation 2: Landforms</b>  <i>Part 3: Schoolyard Erosion and Deposition</i>                      Students search for and analyze evidence of erosion and deposition in the schoolyard.</p> <p><b>LOCATION IDEA:</b></p>	<p>Following the schoolyard activities that are part of the program, students observe erosion and deposition in their neighborhood after rain. See <i>Science and Engineering Extensions</i>.</p>	<p>Students visit a nature center located on a river, a dam/reservoir site, or a water utilities office to learn about the effects of human influences on areas.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principle 1C and 2A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students discuss the phenomenon of flooding and how floods can be detrimental to soils, and search for examples in their schoolyard.</li> </ul>
<p><b>Investigation 3: Mapping Earth's Surface</b></p>		<p>Students hike or bike a mountain or trail and prepare a profile of the trail to plan the hike.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 3A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students use their topographical maps to produce two-dimensional profiles of their schoolyard.</li> </ul>
<p><b>Investigation 4: Natural Resources</b>  <i>Part 2: Making Concrete</i>                      Students go outside to collect materials and make concrete.  <i>Part 3: Earth Materials in Use</i>                      Students walk around the schoolyard examining various earth materials in use.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students are encouraged to find what earth materials are used on the inside or outside of the place where they live). See <i>Home/School Connection, Investigation 4: Natural Resources</i>.</p>	<p>Students visit their local National Resource Conservation Service office to learn about conservation efforts for natural resources and private lands. Students visit an aggregate supplier of sand and gravel.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1B, 2B, 2C, 4A and 5A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students explore earth materials in use in the schoolyard and what natural resources are used to make concrete.</li> </ul>

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\*\* These field trip connections are included as program extensions.

Students explore their local ecosystem and design investigations to study preferred environments, range of tolerance, and optimum conditions for growth and survival of specific organisms, both terrestrial and aquatic.

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<p><b>Investigation 1: Environmental Factors</b></p> <p><i>Part 3: Leaf-Litter Critters</i></p> <p>Students go to the schoolyard to collect, observe, and sort small animals living in natural ground litter. They use a Critter Replicator to become familiar with the anatomical parts of animals they find in the leaf litter.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students hunt for and collect local isopods in the schoolyard. Then students collect organisms from around the schoolyard or in students’ neighborhoods to make a classroom terrarium. See <i>Science and Engineering Extensions</i> for more details.</p> <p>At home, students go on a safari to look for insects. Students organize the results of their safaris and bring them to class. See <i>Home/School Connection for Investigation 1</i>.</p> <p><b>LOCATION IDEA:</b></p>	<p>Plan a field trip to a local natural space with an environmental educator. Encourage the educator to focus on the environmental factors that influence the living things in the area.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1B–C, 2C, 3A, and 3C. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go on a field trip to a local natural space and explore the environmental factors that influence the living things in the area.</li> <li>• Students go outside to the schoolyard to investigate the characteristics of animals living in the leaf-litter environment</li> <li>• Students build a compost pile made of leaves, twigs, bark, and other plant parts which can become a great environment for small animals (leaf-litter critters).</li> </ul>

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<p><b>Investigation 2: Ecosystems</b></p> <p><i>Part 3: Population Simulation</i> Students go to the schoolyard to simulate a population of deer foraging for food in its home range.</p> <p><i>Part 4: Sound Off</i> Students go to the schoolyard and pretend to be animals who have poor vision or are active at night. The animals communicate with one unique sound and try to find others of their kind before being “captured” by a predator. After three rounds of this activity, students sit silently to listen to animals in the schoolyard.</p> <p><b>LOCATION IDEA:</b></p>	<p>Have the class set up a water hole (a mini-pond environment) and observe it over time. This long-term outdoor activity requires regular visits to monitor the water hole for 8–10 weeks. See <i>Environmental Literacy Extensions</i> for extensive project details.</p> <p><b>LOCATION IDEA:</b></p> <p>Students look for an aquatic environment in their neighborhoods. If no aquatic environment is close at hand, they use a local map to inventory the different kinds of aquatic environments nearby. See <i>Home/School Connection for Investigation 2: Ecosystems</i>.</p> <p><b>LOCATION IDEA:</b></p>	<p>Students can visit a local zoo or aquarium and learn more about how abiotic factors impact the lives of different animals.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 2A, 3C, and 4C. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students explore local aquatic environments.</li> <li>• Students go outside to investigate how water holes naturally transform into mini-ponds over time.</li> <li>• Students go outside to engage in a simulation activity about the carrying capacity of an area of the schoolyard for an imaginary population of deer.</li> </ul>
<p><b>Investigation 3: Brine Shrimp Hatching</b></p> <p><i>Part 4: Variation in a Population</i> Students go to the schoolyard in two teams, to place a population of imaginary animals in a suitable habitat based on a description of the population’s natural history.</p> <p><b>LOCATION IDEA:</b></p>			<p>The active investigations and extensions address EP&amp;C Principle 2A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go to the schoolyard and introduce a population of simulated animals to investigate variation in a population.</li> </ul>



<b>Schoolyard Connections</b> <i>Embedded in FOSS Investigations*</i>	<b>Additional Schoolyard Extensions</b> <i>Included with Core Curriculum</i>	<b>Field Trip Connections</b> <i>Extensions to FOSS Investigations**</i>	<b>EP&amp;C/Environmental Literacy Connections</b>
<p><b>Investigation 4: Range of Tolerance</b>  <i>Part 2: Plant Patterns</i>                      Students observe and map plant-distribution patterns in the schoolyard. They discuss the environmental factors that might be responsible for these patterns.</p> <p><b>LOCATION IDEA:</b></p>	<p>Work with school administrators and grounds keepers to create a school garden. See <i>Home/School Connection for Investigation 4</i> for some math problems to help in plan garden projects.</p> <p><b>LOCATION IDEA:</b></p>	<p>Plan a field trip to a nursery or a botanical garden, or a local walking path. Focus the trip on different kinds of plants found in the area and how abiotic factors influence their adaptations and survival.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principle 2A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students explore distribution of plants based potentially on human impact.</li> </ul>

Students explore the properties of the atmosphere, energy transfer from the Sun to Earth, and the dynamics of weather and water cycling in Earth’s atmosphere. They go outdoors and investigate patterns observed in the sky over time and their effect on Earth. The driving question is how do Earth’s geosphere, hydrosphere, atmosphere, and biosphere interact to create a sustainable environment for life?

For more information see the [CA Environmental Principles and Concepts–Grade 5](#), and access the [Planning Guide and other state resources](#) in *Teacher Resources on FOSSweb*.

Every K-5 FOSS module has multiple opportunities of outdoor instruction embedded in the core curriculum. See [Outdoor Experiences in FOSS Next Generation](#) for a summary of the K-8 opportunities. Below you will find one example from grade 5. In addition, see the Environmental Literacy Extensions and Home/School Connections at the end of each investigation guide for additional outdoor explorations.

For support taking students outdoors, see the [Taking FOSS Outdoors](#) resources on FOSSweb, including the [Taking FOSS Outdoors Chapter](#).

<b>Schoolyard Connections</b> <i>Embedded in FOSS Investigations*</i>	<b>Additional Schoolyard Extensions</b> <i>Included with Core Curriculum</i>	<b>Field Trip Connections</b> <i>Extensions to FOSS Investigations**</i>	<b>EP&amp;C/Environmental Literacy Connections</b>
<p><b>Investigation 1: The Sun</b></p> <p><i>Part 1: Shadow Shifting</i> Students go to the schoolyard and compare shadows and explore how and why shadows change during the day.</p> <p><b>LOCATION IDEA:</b></p> <p><i>Part 2: Sun Tracking</i> Students build sun trackers and go outdoors to examine the relationship between the position of the Sun and the length and direction of shadows.</p>	<p>At home, students continue to track the Sun using the Sun tracker, and compare their results to that of the first results. See Home/School Connection, <i>Investigation 1: The Sun</i>.</p>		<p>The active investigations and extensions address EP&amp;C Principle 3A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go outdoors to investigate their shadows and how the Sun appears to track through the sky during the day throughout the year.</li> </ul>
<p><b>Investigation 2: Planetary Systems</b></p> <p><i>Part 1: Night-Sky Observations</i> Students go to the schoolyard and observe the sky and the location of the moon in the daytime. Students discuss why some natural objects are in the night sky and some in the day sky and some at both times.</p>		<p>Students visit a planetarium or an astronomy club and see presentations on the solar system or space exploration.</p> <p><b>LOCATION IDEA:</b></p>	

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<p><b>Investigation 3: Earth’s Atmosphere</b></p> <p><i>Part 3: Local Weather</i>                      Students go outside and compare the outdoor temperature on a thermometer and the reading on the weather-station sensor.</p>	<p>At home, students go and track the weather over time and compare forecast to the actual weather. See Home/School Connection, <i>Investigation 3: Earth’s Atmosphere</i>.</p>		<p>The active investigations and extensions address EP&amp;C Principles 1A and 4B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students take a close look at the properties of air and consider how air is important for life.</li> </ul>
<p><b>Investigation 4: Heating Earth</b></p> <p><i>Part 1: Heating Earth Materials</i>                      Students set up an investigation to compare temperature changes when solar energy is transferred to water and dry soil. They then go outdoors to record and analyze temperature changes of the two materials in sunshine and in shade.</p> <p><i>Part 4: Color and Energy Transfer</i>                      Students design solar water heaters and go outside to test their designs.</p>	<p>Students extend the schoolyard investigations by testing effects of solar energy transfer on other materials in the schoolyard. They can also go outdoors and test new solar heater and solar oven designs. See <i>Environmental Literacy and Engineering Extensions for more information</i>.</p>	<p>Invite to the classroom or take a field trip to visit with a local solar energy company.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principles 1B, 2A, 4A and 5A. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go outside to the schoolyard to investigate what happens to earth materials when they are exposed to solar radiation over time.</li> <li>• Students go outdoors to investigate different designs for solar water heaters.</li> <li>• Students are challenged to make other types of solar water heaters or to design a solar oven.</li> </ul>
<p><b>Investigation 5: Water Planet</b></p>	<p>Students go outside and use rain gauges to measure the amount of precipitation from the next rain or snowstorm.</p> <p><b>LOCATION IDEA:</b></p>		<p>The active investigations and extensions address EP&amp;C Principles 1A, 2C, 4C and 5B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students go outdoors to measure precipitation over time.</li> </ul>

\* These schoolyard connections are an integral part of the program investigations.

\*\* These field trip connections are included as program extensions.

Students explore the phenomenon of ecosystems and organisms in terms of their interacting parts. The driving question for the module is: how can we describe Earth’s biosphere as a system of interacting parts?

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<p><b>Investigation 3: Transport Systems</b></p> <p><i>Part 1: Plant Vascular Systems</i></p> <p>Students go outdoors to discover what happens when some foliage of a growing plant is constrained in a clear plastic bag. When moisture condenses inside the bag, students speculate about the source of the water they find.</p> <p><b>LOCATION IDEA:</b></p>		<p>Students visit the produce section at the market. They select vegetables to test with dye and see where they transport water. See <i>Home/School Connection for Investigation 3</i> for more details.</p> <p><b>LOCATION IDEA:</b></p>	<p>The active investigations and extensions address EP&amp;C Principle 1B. Outdoor connections include:</p> <ul style="list-style-type: none"> <li>• Students investigate plant vascular systems and then go outside to the schoolyard to place bags on branches of living plants.</li> </ul>
<p><b>Investigation 4: Sensory Systems</b></p> <p><i>Part 2: Attention</i></p> <p>Each student chooses attention-getting colors, patterns, and a habitat for an action card. The cards are distributed to other students, who create organisms outdoors to attract the attention of the student who completed the card.</p> <p><b>LOCATION IDEA:</b></p>		<p>Students can visit the nature center, aquarium, or zoo and consider ways that organisms draw attention to themselves.</p> <p><b>LOCATION IDEA:</b></p>	