

Plants and Animals: Learning Goals for Students and Teachers

Overview: The unit central question for this module is *Do plants and animals need the same things to live and grow? Explain your thinking.* In lesson 1, students observe plants and animals in a terrarium and learn about the word *environment*. In lesson 2, students examine photos to determine what different kinds of animals need from their environment to live and grow (food, water, air). In lesson 3, students design and conduct experiments to find out what plants need to live and grow (darkness versus light, water versus no water). In lesson 4, students analyze the results of these experiments and conclude that plants need light and water. After analyzing data from a scientific experiment, they also conclude that plants need air. In lesson 5, students read about how plants make their own food using materials from the environment (sunlight, carbon dioxide, and water). In lesson 6, students compare similarities and differences in the needs of animals and plants (e.g., both plants and animals need food, air, and water, but only plants need sunlight to make their own food).

Student Learning Goals	Teacher Learning Goals
<ol style="list-style-type: none"> 1. An environment is a place that's a home for living things. 2. Plants and animals are living things that need certain materials from their environment to live and grow. 3. Animals need food, water, and air from their environment to live and grow. 4. Designing an experiment to find out about plants' needs involves asking a question, designing an experiment, making predictions, making observations, and gathering evidence. 5. Plants need sunlight, water, and air to live and grow. 6. Plants use light, water, and air from their environment to make their own food. Animals can't make their own food, so they have to find it in their environment. 7. Plants and animals have similar and different needs. They both need food, water, and air that they get from their environment. But plants also need sunlight to make their own food. 	<p>6Ta. Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. (MS-LS1-6, LS1.C)</p> <p>6Tb. The process of photosynthesis converts light energy to stored chemical energy by converting carbon dioxide plus water into sugars plus released oxygen. (HS-LS1-5, LS1.C)</p> <p>6Tc. Although most food production occurs in green plants via photosynthesis, microorganisms also make food in dark regions of the ocean, using chemical reactions as a source of energy rather than sunlight (chemosynthesis).</p> <p>7Ta. Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy. (MS-LS1-7, LS1.C)</p> <p>7Tb. Each cell in an organism needs to receive broken-down matter from the digestion of</p>

	<p>food, water, and oxygen. Some plant cells also need to receive carbon dioxide and sunlight to produce food (photosynthesis).</p> <p>7Tc. Cellular respiration in plants and animals involve[s] chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials. (MS-LS1-7, PS3.D)</p> <p>7Te. Photosynthesis and cellular respiration provide most of the energy for life processes. (HS-LS2-3, LS2.B)</p> <p>7Tf. Living things need water for a variety of functions that support life. Water is vital as a solvent in which many of the body’s solutes dissolve and are carried to all cells in the organism. Water is also essential for many metabolic processes within the body. For example, water is a reactant in the food-making process of photosynthesis. Water is also used to break the bonds of large molecules and generate smaller molecules, such as glucose, fatty acids, and amino acids.</p>
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