

Unit 2: Structure and Function of Organisms

Unit #:	APSDO-00018798	Duration:	8.0 Week(s)	Date(s):	
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Team:
John Mason III (Author), John Salerni, Joan Israelson, Laurie Salva

Grades:
7

Subjects:
Science

Unit Focus

In this unit, students will investigate and experiment with multicellular organisms in the Kingdom Plantae and the Kingdom Animalia. Students will learn about the structure and function of a variety of plants and animals. They will understand that photosynthesis provides the raw materials for all life on Earth and that adaptations and interactions are key to the survival of every organism. Summative assessments may include application problems, experimental designs, laboratory practices, data analyses, models, projects, and position statements. These may be in the form of stand-alone tasks or as part of quizzes, tests, labs, or other assignments. Primary instructional materials include the textbooks Parade of Life: Monerans, Protists, Fungi, and Plants and Parade of Life: Animals, preserved and live organisms, compound and binocular microscopes, prepared microscope slides, dissection instruments and related laboratory equipment and materials.

Stage 1: Desired Results - Key Understandings

Established Goals	Transfer
<p>Next Generation Science Standards (DCI) <i>Science: 7</i></p> <ul style="list-style-type: none"> • In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. <i>LS1.6.A3</i> • Organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring. <i>LS1.6.B2</i> 	<p>T1 (T3) Collect, analyze, and evaluate the quality of evidence in relation to a question. T2 (T5) Communicate scientific information clearly, thoroughly, and accurately. T3 (T2) Design an investigation or model using appropriate scientific tools, resources, and methods. T4 (T4) Develop a valid scientific conclusion, assess its validity and limitations, and determine future course of actions to inspire further questions. T5 (T1) Integrate knowledge from a variety of disciplines and apply it to new situations to make sense of information, formulate insightful questions, and/or solve problems. T6 (T6) Use mathematics to represent physical variables and their relationships, to make quantitative predictions, and to solve problems.</p>
	Meaning

<ul style="list-style-type: none"> Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. <i>LS2.6.A1</i> Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. <i>LS1.6.B3</i> 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. <i>LS1.6.C1</i> 	Understandings		Essential Questions	
	<p>U1 (U307) Systems of specialized cells within organisms help them perform the essential functions of life.</p> <p>U2 (U308) Multicellular organisms have a hierarchical structural organization in which any one system is made up of numerous parts and is itself a component of the next level.</p> <p>U3 (U302) Reproduction is essential to the survival of all species and is accomplished in a variety of ways.</p> <p>U4 (U300) All animals need food, obtained from plants or other animals, in order to live and grow. Plants need water and light to live and grow.</p> <p>U5 (U309) Photosynthesis provides a mechanism for converting light energy into chemical energy (sugars) while cellular respiration breaks down sugar to create a usable form of chemical energy.</p> <p>U6 (U303) All organisms utilize sense receptors to process and respond to information from their environment in order to survive.</p>		<p>Q1 (Q301) How do plant and animal adaptations help them to survive in their environments?</p> <p>Q2 (Q306) How do cells specialize in order to create a hierarchical structure in organisms in which any system is made up of numerous parts?</p> <p>Q3 (Q309) How do organisms receive, process, and respond to sensory information?</p> <p>Q4 (Q308) How do the processes of photosynthesis and cellular respiration provide for the energy demands of living organisms?</p>	
	Acquisition of Knowledge and Skill			
	Knowledge		Skills	
	<p>K1</p> <p>Understand that organisms must carry out many life functions to survive</p> <p>K2</p> <p>Understand that plants and animals have a hierarchy of organization of different cells, tissues, organs, and organ systems that carry out essential life functions</p>		<p>S1</p> <p>Ethically and appropriately work with life specimens</p> <p>S2</p> <p>Safely use dissection tools and procedures</p> <p>S3</p> <p>Mathematically analyze accurate quantitative</p>	

	<p>K3</p> <p>Identify and understand that basic anatomy and physiology of a variety of plants and animals (invertebrate and vertebrate)</p> <p>K4</p> <p>Compare and contrast how a variety of plants and animals (both invertebrate and vertebrate) receive and respond to a sensory stimuli</p> <p>K5</p> <p>Understand how autotrophs and heterotrophs obtain energy through photosynthesis, food-getting, and cellular respiration</p>	<p>data</p> <p>S4</p> <p>Utilize electronic spreadsheets to organize and present data</p>
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