

Unit 4: Plants and Animals

Unit #:	APSDO-00034871	Duration:	10.0 Day(s)	Date(s):	
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Team:
 Jodi Kryzanski (Author), Allison Zmuda, Kerry Lurate, Donna Nestler-Rusack, Jodi Kryzanski, Andrea Galuska, Ann Marie Castle, Kate Matos, Jonathan Moss, Michelle Gladue, Brian Kelly, Mary Labowsky, Laura McDonnell, Nancy Wall, Lynne Zemaitis

Grades:
 4

Subjects:
 Science

Unit Focus

In this unit, students will learn about plant and animal structures, both internal and external, that help the organisms grow and survive. Students will dissect a daffodil to discover these internal and external parts. Students will utilize the engineering design process as they design a "better thermos" based on their study of blubber. They will also develop an understanding of sense receptors that process different kinds of information. Finally, students will learn that animals' perceptions and memories guide their actions by studying mealworms. Summative assessments include a performance task with a written component that assesses mastery of content and skills. Supporting instructional materials for this unit may include mentor text(s), print and online resources, related laboratory equipment and materials, and teacher generated inquiry tasks.

Stage 1: Desired Results - Key Understandings

Established Goals	Transfer	
<p>Next Generation Science Standards (DCI) <i>Science: 4</i></p> <ul style="list-style-type: none"> • At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. <i>ETS1.4.B2</i> • Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their 	<p>T1 (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.</p> <p>T2 (T2) Design an investigation or model using appropriate scientific tools, resources, and methods.</p>	
	Meaning	
	Understandings	Essential Questions
	<p>U1 (U316) Animals rely on their senses and memories to guide their actions.</p> <p>U2 (U313) Animals use parts of their bodies</p>	<p>Q1 (Q303) How do organisms use their senses to help them survive?</p> <p>Q2 (Q316) How do parts of this organism</p>

<p>perceptions and memories to guide their actions. <i>LS1.4.D1</i></p> <ul style="list-style-type: none"> • Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. <i>ETS1.4.C1</i> • Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. <i>LS1.4.A1</i> • Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. <i>ETS1.4.A1</i> • Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. <i>ETS1.4.B1</i> • Testing a solution involves investigating how well it performs under a range of likely conditions. <i>ETS1.4.B4</i> • Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. <i>ETS1.4.B3</i> 	<p>to survive, grow, and reproduce in their environment.</p> <p>U3 (U314) Plants have different parts (i.e., roots, stems, leaves, flowers, fruit) that help them to survive, grow, and reproduce.</p> <p>U4 (U205) Engineers learn from failure. Failure helps engineers learn more about how things work and how they can improve upon their design.</p> <p>U5 (U207) Engineers respond to a need by understanding the problem and developing solution(s) within given constraints and criteria.</p> <p>U6 (U208) There is often more than one possible solution to a problem, but some are more effective than others given the criteria and constraints.</p> <p>U7 (U941) Outcomes of experiments/solutions often lead to new questions/problems for further investigation.</p> <p>U8 (U920) There is often more than one valid approach to designing and investigating a problem.</p>	<p>help it grow and survive?</p> <p>Q3 (Q201) What problem do I want to solve? How do I design a model/drawing to create a solution? How do I test it out and continue to make it better?</p> <p>Q4 (Q202) What can I learn from my experience?</p> <p>Q5 (Q924) What questions do I wonder about? How can I use science to figure out the answer?</p> <p>Q6 (Q921) How do I use tools and materials to carry out my testing or build my model?</p> <p>Q7 (Q913) How can I use science to figure out the answer, solve a problem, or design a solution?</p>
Acquisition of Knowledge and Skill		
Knowledge		Skills
<p>K1</p> <p>Animals use their senses (i.e., taste, smell, sight, touch, hearing) to respond to their environments (e.g., find food, identify offspring, find a mate, sense danger)</p> <p>K2</p> <p>Plants and animals have internal and external structures that support survival, growth, reproduction, and behavior</p> <p>K3</p>	<p>S1</p> <p>Explain how animals use their senses to respond to their environment and learn from their experiences</p> <p>S2</p> <p>Create a model to illustrate that plants have internal and external structures that support survival, growth, reproduction, and behavior</p> <p>S3</p> <p>Design a solution to a skills</p>	

	Information processing using the senses includes stimulus, reception, and response	engineering design process S4 Test a design solution to see how well the design solves the problem
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