

Unit 5: Structures and Processes (From Molecules to Organisms)

Content Area: **Science**
Course(s):
Time Period: **Generic Time Period**
Length: **3 weeks**
Status: **Published**

Essential Questions

Specific NGSS: 4-LS1-1

Essential Unit Question:

- How do the internal and external parts of plants and animals support their survival, growth, behavior, and reproduction?

Guiding Questions:

- How do internal and external parts of plants and animals help them to survive, grow, behave, and reproduce?

Objectives:

- SWBAT construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Concepts that will be taught...

1. A system can be described in terms of its components and their interactions.
2. Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.

Disciplinary Core Ideas

Structure and Function

- Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.

MA.4.4.G.A.3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
LA.4.W.4.1	Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
SCI.4-LS1	From Molecules to Organisms: Structures and Processes
SCI.4-LS1-1	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
SCI.4-LS1-2	Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
LA.4.SL.4.5	Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.

Learning Activities

- In this unit of study, students spend time observing plants and animals in order to gather evidence that organisms are living systems. A system is made up of structures and processes that interact and enable the system to function. Every plant and animal can be described in terms of its internal and external structures and their interactions, and these structures each have specific functions that support survival, growth, behavior, and reproduction for the organism.

- Using a variety of plants and animals as examples, students need multiple opportunities to:
 - Describe the internal and external structures of a plant or animal and the function of each of those structures. Description should explain how each structure serves various functions in growth, survival, behavior, and/or reproduction. *(Note: This is limited to macroscopic structures within plant and animal systems, and could include such structures as thorns, stems, roots, and colored petals for plants, and heart, stomach, lung, brain, and skin for animals.)*
 - Describe the interactions that occur among the structures within the plant or animal system.

- As students observe the structures of an animal or plant, explain the function of each, and describe how these structures help the animal grow, survive, and/or reproduce, they should use evidence from their observations to support their explanations.

Mystery 4: Brain & Nerves

***Students explore the brain's role in receiving information from the senses, processing that information, and controlling the muscles to enable movement. In the activity, students test their reflexes and develop a mental model of how their brain works.*

Essential Question - How does your brain control your body?

Materials: To do all three experiments, students will need - a sheet of paper (notebook or typing paper), a wooden or plastic ruler (one for each pair of students), a table or desk, a "Think Fast!" handout.

Procedure: Prior to teaching lesson, watch activity instructions and obtain/print out all necessary student materials and teacher answer keys. Access Mystery Science website on SmartBoard. Utilize classroom iPads for small group/individual use as desired. View Exploration video (30 min). Follow prompts for stopping points for questioning & discussion. Guide students in prepping and carrying out Quick Experiments: Hole in Your Hand & Color Words, as well as Activity: Think Fast! (20 min). Optional Extras are available to supplement lesson (2 hrs).

Assessment: Informal observation during exploration & activity, Mystery 4 assessment, summative assessment

Assessments

Science Textbook

- Chapter Review
- Chapter Test

Mystery Science

- Individual Mystery Assessments
- Summative Assessment
- Informal Observation during explorations & activities

Teacher-Made Assessments

- Quizzes
- Tests
- Classwork
- Homework
- Projects

Materials & Resources

www.mysteryscience.com

Mystery 4: Students will need - a sheet of paper (notebook or typing paper), a wooden or plastic ruler (one for each pair of students), a table or desk, a "Think Fast!" handout.

Accommodations & Modifications

- Large print textbooks
- Additional time for assignments
- Review of directions
- Have student restate information
- Provision of notes or outlines
- Concrete examples
- Adaptive writing utensils

- Support auditory presentations with visuals
- Weekly home-school communication tools (notebook, daily log, phone calls or email messages)
- Space for movement or breaks
- Extra visual and verbal cues and prompts
- Books on tape
- Graphic organizers
- Quiet corner or room to calm down and relax when anxious
- Preferential seating
- Alteration of the classroom arrangement
- Reduction of distractions
- Answers to be dictated
- Hands-on activities
- Use of Manipulatives
- Follow a routine/schedule
- Alternate quiet and active time
- Teach time management skills
- Rest breaks
- Verbal and visual cues regarding directions and staying on task
- Daily check-in special education teacher
- Visual daily schedule
- Varied reinforcement procedures
- Immediate feedback
- Personalized examples