

Discovering Shells



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Discovering Shells

Contents

Overview

Science Process Skills

Lessons at a Glance

Key Concepts

Lesson Guide

Lessons:

- 1. Waves in a Bottle*
- 2. Shells Protect*
- 3. Shells on the Beach*
- 4. Shell Mystery*

Discovering Shells

Overview

Overall Goal: Children use multiple attributes to sort and categorize shells, and learn about their functions.

Lesson	Objectives	Vocabulary	Key Concepts	Tools
#1: Waves in a Bottle	Children will create a beach model with water, sand, tiny rocks and seashells.	beach cockle shell conch shell ocean seashell(s) waves	<ul style="list-style-type: none"> The crashing and grinding action of waves can cause seashells to break into small pieces. Ocean waves and wind can carry shells, pieces of shells and tiny rocks to shore, creating sand. Many animals that have shells to protect their bodies can be found in the ocean. A model isn't the real thing. It gives us an idea of what the real thing is like. 	beach model
#2: Shells Protect	Children will understand that shells provide protection for mollusks.	hard/soft inside/outside model mollusk(s) protect	<ul style="list-style-type: none"> Shells come from animals called mollusks. Mollusks live inside a shell, which they make, and that is part of their body. The hard shell protects their soft bodies. Mollusks cannot come all the way out of their shells. A model isn't the real thing. It gives us an idea of what the real thing is like. 	mollusk model
#3: Shells on the Beach	Children will sort shells using one attribute at a time.	auger shell large/small magnifier moon snail shell pointy/round rough/smooth shiny/dull	<ul style="list-style-type: none"> Different types of shells have different names. Shells can be found at the beach. Shells are hard. Shells have many different shapes, sizes, textures, colors and patterns. 	large magnifier
#4: Shell Mystery	Children will classify shells using multiple attributes at the same time.	chart column conchologist row same/different	<ul style="list-style-type: none"> Shells can be sorted by shape and color. Shells can be classified using more than one attribute. 	chart/matrix

Discovering Shells

Science Process Skills

Science Process Skills	Lesson #1	Lesson #2	Lesson #3	Lesson #4
Observing				
Identifies object properties	●	●	●	●
Uses senses to observe concrete, familiar objects	●	●	●	●
Differentiates between models and the real thing	●	●		●
Uses measurement tools to record observations				
Uses tools to observe objects or events			●	
Describing				
Describes key attributes of objects	●	●	●	●
Creates drawings or models depicting objects	●			
Describes changes in objects		●		
Discusses changes in variables that affect an investigation				
Categorizing				
Notices similarities and differences		●	●	●
Sorts objects into groups using one attribute at a time			●	●
Establishes own sorting criteria			●	●
Sorts objects using multiple attributes				●
Provides reasoning for grouping objects			●	●
Predicting				
Verbalizes thinking	●	●	●	●
Recognizes and extends patterns				●
Makes simple predictions		●		
Makes predictions based on observations		●		
Uses estimation to make quantitative predictions				
Experimenting				
Investigates models of objects/phenomena	●	●		
Manipulates materials		●	●	
Identifies factors that might affect the outcome of an experiment				
Participates in collecting data				
Interprets data using symbols or graphs				
Performs trial-and-error investigations				
Drawing Conclusions				
Makes verbal interpretations of observations		●		
Finds patterns from data collected				
Connects findings from an investigation		●		

Discovering Shells

Lessons at a Glance

Waves in a Bottle transports children on a make-believe journey to the beach as they listen to ocean wave sounds on a recorded CD. They learn that the crashing and grinding action of waves can cause seashells to break into small pieces, and ocean waves can carry shells, pieces of shells, and tiny rocks to shore, creating sand. Children learn that many animals that have shells to protect their bodies can be found in the ocean. Children use a bottle to create their own beach model, tipping it from side to side to the sounds of ocean waves, and observe the motion of the waves inside the bottle.

In **Shells Protect**, children discover that shells are grown by mollusks to protect their soft bodies. Children compare how a shell is similar to a helmet, because it protects the mollusk inside. They also use play dough to make a model of a mollusk and explore how a shell can protect it.

Shells on the Beach were once the homes of mollusks. Children explore each of the shell's attributes: Is it smooth or rough? Is it big or small? Is it soft or hard? Is it broken or whole? Learning about attributes, sequencing, categorizing, and sorting has never been so much fun!

In **Shell Mystery**, can the children find the missing shell? This lesson requires children to become conchologists and use multiple attributes at the same time to figure out which shell has been removed from the chart. Children learn to identify shells by their shape and color.



Discovering Shells

Key Concepts

Shells protect mollusks and other animals. Over time, small pieces of broken shells combine with pebbles to form sand. The variety and patterns of seashells are intriguing to children, who enjoy sifting and sorting through the different sizes, shapes, colors and patterns. In this ECHOS unit, children learn to sort shells by one attribute at a time; next, they use a chart to sort using two attributes at the same time: color and shape. The sorting process is designed to get children to think about the features of shells as a foundation for developing basic analysis skills. **Discovering Shells** introduces life and Earth science concepts through the exploration and classification of shells.

- Some mollusks live in salt water and some live in fresh water.
- Shells are the hard outer coverings, or exoskeletons, of most mollusks. A mollusk has a thin layer of tissue called a mantle that secretes chemicals that harden to become the shell. A mollusk's shell grows throughout its lifetime.
- The lessons focus on the **conch**, **moon snail**, **cockle**, and **auger** shells, but these four shells are just a few of the many varieties of mollusks.
 - The conch has a spiral-shaped shell with a narrow, notched opening.
 - The moon snail shell has a rounded shape and comes in many colors depending on what region they are from.
 - Cockle shells consist of two pieces of shells hinged together.
 - Auger shells are cone shaped.



conch shell



moon snail shell



cockle shell



auger shell

Lesson Guide

TEACHER TALK

Teacher talk is indicated by **bold letters that appear in large print**. When you first start teaching ECHOS, you may need to rely heavily on this text to ensure that you are presenting the science concepts accurately. As you become familiar with the text, use it as a guide or refer to it only as needed. You should always read the entire script prior to delivering the lesson.

TEXT IN ALL CAPS

Text IN ALL CAPS appears throughout the script to emphasize a step or instructions given to children.

VOCABULARY WORDS

Vocabulary words are introduced during the lesson and reinforced in the Outcomes section.

They appear in *red italic letters* the first time they are introduced.

MATERIALS IN BLUE LETTERS

Materials listed in *blue letters* in the *Material Preparation* page, indicate materials that are non-consumable. Once acquired, these materials do not need to be replaced.

SCIENCE AREA

The last page of each lesson contains suggested materials that could be added to your science area. Before adding any materials for children's independent use, evaluate whether the item is safe to be explored with limited supervision. The science area should be a place that children use freely to explore and conduct their own trial and error experiments, rather than a display area.