Life Cyle

Life Science | Lesson Guide

Kindergarten

Photo Description

This image shows broken eggshells nestled in soil with green plant stems and decomposing mulch nearby. The white shells are cracking open and breaking apart as they sit in the garden environment. This is a natural example of how things break down and change over time in nature.

Scientific Phenomena

Anchoring Phenomenon: Eggshells decomposing and returning nutrients to soil

This image captures the observable process of decomposition—how dead or discarded materials break down into smaller pieces and eventually become part of the soil. Eggshells contain calcium and other nutrients that plants need to grow. As the shells crack, weather them, and interact with soil organisms (microbes, fungi, insects), they gradually break apart into nutrients that enrich the soil. This is a visible example of nutrient cycling in nature: materials from one organism (the egg) support life in another (plants).

Core Science Concepts

* Decomposition: Materials break down into smaller pieces over time, especially when exposed to water, air, and soil organisms. Decomposed materials become nutrients that help new living things grow.

* Life Cycles: Living things grow, change, and eventually return materials to Earth. Eggshells represent the "end" of an egg's function, but the "beginning" of its role in feeding the soil.

* Nutrient Cycling: Everything in nature is recycled. Dead materials don't disappear—they transform and feed new life. Eggshells become food for plants.

* Observation of Change Over Time: Students can watch how objects change when placed in soil and exposed to natural conditions (rain, sun, soil creatures).

Pedagogical Tip:

For Kindergarteners, avoid overwhelm by focusing on ONE clear observation: "Eggshells break into smaller pieces in the garden." Use repetitive language ("break," "change," "grow") and point to visible changes rather than abstract processes. Collect eggshells in class and let students observe them weekly—concrete, hands-on observation is developmentally appropriate and memorable.

UDL Suggestions:

Representation: Provide real eggshells for students to handle and observe (ensure they're clean and safe). Use picture cards showing: whole egg !’ broken eggshell !’ crumbly pieces !’ rich soil. Action & Expression: Allow students to express learning through drawing, sorting shells by size, or acting out the decomposition process. Engagement: Connect to students' experiences: "You eat eggs at breakfast—where do the shells go? Let's help them grow a garden!"

Discussion Questions

1. "What is happening to the eggshells in this picture? What do you notice?" (Bloom's: Remember | DOK: 1)
   - Encourages observation of visible change and familiar objects.

2. "Why do you think eggshells are breaking into smaller and smaller pieces in the soil?" (Bloom's: Analyze | DOK: 2)
   - Prompts thinking about cause and effect: rain, time, soil creatures, and temperature.

3. "If we bury eggshells in our classroom garden, what do you predict will happen in 4 weeks?" (Bloom's: Create | DOK: 3)
   - Encourages prediction and experimentation mindset.

4. "How do you think broken eggshells help plants grow?" (Bloom's: Understand | DOK: 2)
   - Builds connection between decomposition and plant nutrition; introduces the "food for plants" concept.

Extension Activities

1. "Eggshell Decomposition Observation Station"
   - Collect clean eggshells and place them in a clear plastic container with soil and water. Have students observe and draw weekly changes over 4–6 weeks. Create a picture graph showing eggshell size: whole !' cracked !' small pieces !' barely visible. Discuss: "What made them break?"

2. "Plant a Seed in an Eggshell"
   - Fill cleaned eggshell halves with potting soil, plant fast-growing seeds (radish, bean), and water gently. As the plant grows and the eggshell naturally decomposes, students see the connection: old eggshell = new plant food. Plant the entire eggshell in the garden when seedlings are ready.

3. "Sorting & Sensory Exploration"
   - Provide sorted containers of eggshells (whole, cracked, crushed, powder) and let students feel, sort by size, and arrange in order from biggest to smallest. Ask: "What happened to make them different?" Connect to gardening: "Crushed eggshells mix with soil faster!"

NGSS Connections

Relevant Performance Expectation:
- K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.

Disciplinary Core Ideas:
- K-LS1.A - All organisms have basic needs. Plants need nutrients from soil.
- K-LS1.C - Death and decomposition are natural processes that return nutrients to soil, supporting new life.

Crosscutting Concepts:
- Patterns - Patterns of decomposition and regrowth repeat in nature.
- Systems and System Models - A garden is a system where dead materials cycle back to feed living plants.

Science Vocabulary

* Eggshell: The hard, white or brown covering that protects the baby bird or egg inside.
* Decompose (or "break down"): When something gets smaller and crumbles into pieces over time, usually in soil.
* Nutrients: Special food that plants need from soil to grow strong and healthy.
* Soil: The dark, crumbly material in gardens where plants grow their roots and get their food.

* Garden: A place where we grow plants, often by digging in soil and adding water and sunlight.

External Resources

Children's Books:
- The Tiny Seed by Eric Carle – Shows seed growth and life cycles with beautiful illustrations.
- From Seed to Plant by Gail Gibbons – Clear, simple diagrams of how plants grow and what they need.
- Compost Stew by Mary McKenna Siddals – A rhythmic story about decomposition and soil creation.

YouTube Videos:
- "What Happens to Eggshells?" by Science Kids (2:30 min) – Short, animated explanation of decomposition with child-friendly narration. Available on Science Kids YouTube channel
- "Garden Composting for Kids" by National Geographic Kids (3:45 min) – Visual exploration of how garden waste breaks down and becomes soil food. Available on National Geographic Kids YouTube channel

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Notes for Implementation:
This lesson is ideal for spring planting units or recycling/sustainability themes. Kindergarteners learn best through direct sensory experience, so handling real eggshells and observing changes over weeks will embed these concepts far better than pictures alone. Connect to home: encourage families to save eggshells and discuss where they go!