Life Cycle Stage of Monarch Butterfly

1st Grade

Life Science | Lesson Guide

Photo Description

Two cocoons hang from a building. One cocoon is brown and looks old. The other cocoon is bright green and looks new. These are butterfly cocoons where caterpillars change into butterflies.

Scientific Phenomena

This image shows the Anchoring Phenomenon of metamorphosis - specifically the pupal stage where caterpillars transform into butterflies inside protective cocoons (chrysalises). The green chrysalis represents an active transformation stage where the monarch caterpillar's body is completely reorganizing its tissues, organs, and structure to become a butterfly. The brown chrysalis appears to be either newly emerged (empty) or in the final stages before emergence. This dramatic change happens through a process called complete metamorphosis, where special groups of cells called imaginal discs direct the formation of adult butterfly features.

Core Science Concepts

1. Life Cycles: All living things go through changes as they grow from babies to adults
2. Animal Needs: Animals need safe places to grow and change, like caterpillars using cocoons for protection
3. Animal Structures: The hard shell of the cocoon protects the soft caterpillar inside while it changes
4. Time and Change: It takes time for animals to grow and change into their adult forms

Pedagogical Tip:

Use real monarch chrysalises or high-quality models alongside this photo to help students make concrete connections. First graders learn best when they can touch and examine objects while discussing the concepts.

UDL Suggestions:

Provide multiple ways for students to express their understanding: drawing the life cycle stages, acting out the metamorphosis process with their bodies, or creating a simple sequence chart with pictures and words.

Zoom In / Zoom Out

1. Zoom In: Inside the green cocoon, special cells are breaking down the caterpillar's body parts and building new butterfly parts like wings, antennae, and a long tongue for drinking nectar.

2. Zoom Out: These monarch butterflies will join millions of others in an amazing journey that can travel thousands of miles to find warm places for winter, connecting ecosystems across North America.

Discussion Questions

1. What do you think is happening inside the green cocoon? (Bloom's: Analyze | DOK: 2)
2. Why might caterpillars need a hard shell around them while they change? (Bloom's: Evaluate | DOK: 3)
3. How are these two cocoons the same and different? (Bloom's: Analyze | DOK: 2)
4. What do you predict will come out of the green cocoon? (Bloom's: Apply | DOK: 2)

Potential Student Misconceptions

1. Misconception: The caterpillar just grows wings inside the cocoon
   Clarification: The caterpillar's body completely changes - it's like melting down and rebuilding into a totally different animal

2. Misconception: All cocoons look the same
   Clarification: Different butterflies and moths make different types and colors of cocoons based on their species

3. Misconception: The change happens quickly overnight
   Clarification: It takes about 1-2 weeks for the complete change to happen inside the cocoon

Cross-Curricular Ideas

1. Math - Sequencing & Counting: Create a number line showing the stages of butterfly metamorphosis (1st = egg, 2nd = caterpillar, 3rd = chrysalis, 4th = butterfly). Students can count the days it takes for a chrysalis to open (about 10-14 days) and practice skip-counting by 2s or 5s to estimate total time.

2. ELA - Life Cycle Storytelling: Have students dictate or write simple sentences about what happens at each stage of the butterfly's life. Create a class "Big Book" with one stage per page, illustrated by students. This builds narrative sequencing skills and vocabulary development.

3. Art - Color Study & Chrysalis Design: Students observe the green chrysalis's color and create their own chrysalis artwork using watercolors, tissue paper collages, or clay. Discuss why some chrysalises are green (camouflage) and others are brown, connecting art to survival strategies.

4. Social Studies - Habitat & Community: Explore where monarchs live and migrate. Create a simple map showing where caterpillars find milkweed plants (their only food) and where adult butterflies travel for winter, helping students understand interconnected ecosystems and animal homes.

STEM Career Connection

1. Entomologist (Bug Scientist): An entomologist studies insects like butterflies, caterpillars, and moths. They watch how insects grow, what they eat, and how they help plants and flowers. Some entomologists work in museums, zoos, or nature centers to teach people about bugs. They might even raise butterflies like the ones in this photo! Average Salary: $63,000/year

2. Conservation Biologist: These scientists work to protect animals and plants in nature. A conservation biologist might study monarch butterflies and help save milkweed plants so caterpillars have food to eat. They work outdoors in forests, gardens, and nature reserves. Average Salary: $68,000/year

3. Educator or Museum Docent: Some people work at science museums, nature centers, or aquariums teaching kids about animals and their life cycles. They might show real chrysalises and butterflies (like in this photo) to help children learn about metamorphosis and why insects are important. Average Salary: $35,000-$48,000/year

NGSS Connections

- Performance Expectation: 1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive
- Disciplinary Core Idea: 1-LS1.B - Growth and Development of Organisms
- Crosscutting Concept: Patterns

Science Vocabulary

* Cocoon: A protective shell where a caterpillar changes into a butterfly
* Caterpillar: The young form of a butterfly that looks like a worm
* Metamorphosis: The big change when a caterpillar becomes a butterfly
* Life cycle: All the stages a living thing goes through as it grows up
* Chrysalis: The special name for a butterfly's cocoon

External Resources

Children's Books:
- From Caterpillar to Butterfly by Deborah Heiligman
- The Very Hungry Caterpillar by Eric Carle
- Monarch Butterfly by Gail Gibbons