

Four bodies, one animal

Grades 3 to 5, ages 8 to 11. Two 45-minute sessions, plus observation over four weeks.

Monarchs live in four completely different bodies. Students model the sequence, work out how long each stage lasts, and confront the strangeness of an animal that dissolves itself and starts again.



Captain-tucker. CC BY-SA 3.0. Wikimedia Commons.

What students will be able to do

- Sequence the four stages and give approximate durations for each.
- Explain that the caterpillar and the butterfly eat completely different food with completely different mouthparts.
- Use a model to explain a process that cannot be watched directly.

Materials

- Printed life-cycle cards, or paper to draw them
- A milkweed plant with eggs or caterpillars, or good photographs
- A tape measure and a calculator

How it runs

1. Ask what a caterpillar eats. Then ask what a butterfly eats. Let the class notice that the answers are different, and that this is strange.
2. Introduce the four stages: egg for about four days, caterpillar for about two weeks, chrysalis for about ten days, adult for two to six weeks.
3. Groups arrange the cards and add the durations. Ask them to total it: an ordinary summer monarch exists for roughly seven weeks from egg to death.
4. Now tell them about the fall generation, which lives eight months and flies to Mexico. Ask what would have to be different about that butterfly.
5. A caterpillar grows from about 2 mm to about 45 mm. Ask the class to work out the multiplier, then scale it: if a child grew that much, how tall would they be?
6. If you have caterpillars, observe daily and record. If not, use photographs and a time-lapse video.

Discussion questions

- The caterpillar has chewing jaws and the butterfly has a drinking straw. Why does one animal need both, at different times?
- Inside the chrysalis, most of the caterpillar is broken down and rebuilt. What survives?
- Why might it help a species if its young and its adults eat completely different things?

Taking it further

Compare with a grasshopper, which hatches as a small version of the adult. Which strategy looks better, and for what?

Safety

If rearing caterpillars, keep numbers to a handful, rinse cut milkweed, sterilize containers between broods, and release adults where the eggs were found.

NGSS alignment

Code	Performance expectation
3-LS1-1	Develop models to describe that organisms have unique and diverse life cycles.
4-LS1-1	Construct an argument that plants and animals have internal and external structures that support survival, growth, behavior and reproduction.

<https://milkweedusa.com/learn/four-stage-life-cycle/>