

Visible Elements in Photo



- A dead or weathered log with flaking, layered bark in shades of gray and dark brown
- A tan/beige-colored lizard or small reptile on the log, blending in with the bark texture
- Forest floor debris: scattered leaves, twigs, and wood chips in browns and tans
- Dappled light and shadow across the scene
- Multiple layers of decomposing wood and organic material in the background

Reasonable Inferences

- From lizard placement on log: The reptile relies on color and texture similarity to avoid detection by predators—this is camouflage adaptation for survival.
- From variety of wood textures and colors: Natural environments contain many different surfaces; animals must match their surroundings to hide effectively.
- From forest floor debris: Small creatures need shelter and protection in natural settings where predators hunt by sight.

Engineering Task

K-2 Challenge:

Your job is to design a hiding spot for a small animal (like a lizard or bug). Using natural materials from outside, build a shelter that blends in with its surroundings so a pretend predator can't spot it easily. What colors and textures should you use? Can you make it so the animal is hard to see?

3-5 Challenge:

Design a protective shelter for a small creature (lizard, salamander, or insect) that must meet these criteria:

- Use only natural materials (leaves, bark, twigs, soil) collected from a nearby area
- The shelter must be at least 10 cm long and allow the animal to hide inside
- At least 80% of the shelter's visible surface must match or blend with the surrounding environment (test by placing it on the forest floor and seeing if it "disappears" at arm's length)
- The structure must withstand light rain without collapsing (test with a spray bottle)

Sketch your design first. Build and test it. Redesign if it fails any test.

EDP Phase Targeted

Ask / Define Problem — This photo shows a real-world survival need (an animal hiding from predators in nature). Students must first observe why the lizard chose this spot and what problem camouflage solves before they design a shelter. The challenge naturally starts with asking: "Why is this lizard so hard to see? What does it need to survive?"

Suggested Materials

- Fallen leaves (various sizes and colors)
- Bark pieces and wood chips

- Small twigs and sticks
- Soil or sand
- Spray bottle (for water/rain simulation)
- A small toy animal or figurine (for testing visibility)

Estimated Time

K-2: 30-40 minutes (10 min observation + collection, 15-20 min building, 5-10 min testing/sharing)

3-5: Two 35-40 minute sessions (Session 1: observation, sketching, material collection, building; Session 2: testing, refinement, documentation)

Why This Works for Teachers

This task directly addresses NGSS ETS1.A (defining and delimiting engineering problems) by grounding the challenge in observable biological need, and ETS1.B (developing possible solutions) by requiring students to prototype a design that meets specific performance criteria tied to real animal behavior.