

Visible Elements in Photo



- A lizard (brown and white patterned) perched on a green leaf or plant stem
- Elongated body with four legs and a long tail
- Textured skin with distinct color patterns (brown spots on white belly, brown on back and tail)
- Green plant material (leaf or stem) serving as the lizard's perch
- Natural outdoor setting with blurred green background

Reasonable Inferences

- From lizard's grip on narrow stem: This animal needs to climb and balance on thin plant surfaces, suggesting specialized feet or body design adapted for grip and stability.
- From color pattern (brown/white contrast): The lizard's coloring may provide camouflage in its natural habitat, helping it hide from predators or prey.
- From leaf/stem structure: The plant must support the lizard's weight without bending or breaking, implying strength-to-weight balance is important in nature.

Engineering Task

K-2 Challenge:

"Design a Safe Climbing Path for a Lizard"

Your job: Build a path that a small lizard (or toy lizard) can climb and balance on. Use string, sticks, or paper strips to make branches and leaves. Your path must:

- Be at least as thick as a pencil (so the lizard can hold on)
- Go up at least 12 inches high
- Not wobble or fall apart when you gently touch it

Can your lizard stay on without falling off?

3-5 Challenge:

"Engineer a Climbing Structure That Mimics Plant Support"

Design and build a structure that allows a small animal (toy figurine, 2–3 inches long) to climb safely from the ground to a height of 18 inches. Your structure must:

- Use only 5 different types of materials (e.g., dowels, string, leaves, foam, tape)
- Support the animal's weight without bending more than ½ inch at any point
- Include at least 3 different "perch" or "grip" surfaces (branches, ledges, etc.) with varying diameters (thick to thin)
- Be stable enough that the animal doesn't slide or tip when placed on any perch

Test it: Does your structure hold the animal in at least 5 different positions without failing?

EDP Phase Targeted

Ask / Define Problem — This phase fits best.

Why: The photo shows a real animal solving a real problem (maintaining grip and balance on living plant material in nature). Students can observe the lizard's body design and the plant's structure, then identify the core problem: "How do plants support climbing animals?" and "What makes a good climbing surface?" From there, they design their own structure. The problem is grounded in nature observation rather than jumping directly to a solution.

Suggested Materials

1. Dowels or thin wooden sticks (various diameters: $\frac{1}{4}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ ")
 2. String or jute twine (for wrapping, hanging, or creating rope "branches")
 3. Foam tubing or pool noodles (soft, grippy, easy to cut into perches)
 4. Real plant material (collected leaves, bark, small branches from outside)
 5. Tape (duct tape, painter's tape, or masking tape for joining/securing)
- Optional: Hot glue gun, foam blocks, or plastic cups (for varied grip surfaces)

Estimated Time

Two 30-minute sessions (or one 45–60 minute block):

- Session 1: Observation, discussion, sketching design (15–20 min); building begins (15–20 min)
- Session 2: Finish building, test, troubleshoot, revise (30 min)

Why This Works for Teachers

This task aligns with NGSS K-ETS1-1 / 1-ETS1-1 / 3-5-ETS1-1 (Ask questions, define problems, and develop possible solutions) by having students observe a real animal's biomechanical needs and translate that observation into a human-made structure that solves the same problem of climbing and stability.