

### Visible Elements in Photo



- A fox squirrel (or similar ground squirrel) holding an orange food item
- Planted garden bed with soil and green seedlings/plants on both sides
- Red and white flowering plants (appear to be geraniums or similar) in the background
- Low green foliage surrounding the squirrel at ground level
- Bare soil visible between plants

### Reasonable Inferences

- From squirrel + garden setting: The animal is foraging in or near planted areas, suggesting a conflict between wildlife feeding needs and human crop protection.
- From young seedlings + vulnerable plants: Newly planted gardens are susceptible to animal damage (digging, eating sprouts, trampling), indicating a need for a protective barrier.
- From squirrel's ground-level position: The creature burrows and moves near soil level, so any solution must address below-ground and surface-level access.

### Engineering Task

#### K-2 Challenge:

Make a safe fence or cover for a garden bed that keeps hungry animals away but lets sunlight and rain reach the plants. Your design should be strong enough so an animal cannot push it down or dig under it.

#### 3-5 Challenge:

Design a protective garden barrier that satisfies these requirements:

- Allows sunlight and water to reach plants beneath it
- Stands at least 12 inches tall above soil and extends at least 4 inches below soil surface (or lies flat as a barrier)
- Uses only classroom-safe, reusable materials (no toxic substances)
- Can be built in 45 minutes and tested by applying downward pressure and simulated digging
- Success: Barrier withstands 5 pounds of downward force without collapsing; blocks a small toy animal from reaching a marker placed at the "plant" location below

### EDP Phase Targeted

Ask / Define Problem — This photo shows a real-world conflict (wildlife vs. garden) with no obvious solution visible. Students must first observe and articulate why gardens need protection and what the barrier must achieve before designing anything. The squirrel's behavior prompts curiosity and problem identification naturally.

### Suggested Materials

- Chicken wire, hardware cloth, or plastic mesh fencing
- Wooden dowels, sticks, or PVC pipes (for frame)
- Landscape fabric or burlap

- Zip ties or twist ties
- Soil or sand (for testing below-ground effectiveness)

### Estimated Time

45–60 minutes (single session for K-2; one 45-minute session for 3-5 with optional testing extension to a second session)

### Why This Works for Teachers

This task directly addresses NGSS ETS1.A (defining engineering problems by identifying criteria and constraints from real-world observations) while grounding learning in a visible, relatable ecosystem interaction that students can see in their own schoolyard or home gardens.