

Visible Elements in Photo



- A stinkhorn mushroom with distinctive bright orange/red coloring on the lower portion and olive-green upper section
- Shredded wood mulch or wood chips covering the ground surface
- Moist soil visible beneath the mulch layer
- The mushroom's tall, narrow stem structure rising above the surrounding material
- Textured, bumpy surface on parts of the mushroom

Reasonable Inferences

- From orange/red coloring + ground location: The bright color likely attracts insects (a communication or signaling mechanism), suggesting the organism needs to be "noticed" by other living things in its environment.
- From tall stem structure + low mulch surface: The mushroom is designed to extend upward, which infers it needs to reach above ground-level obstacles to disperse or be effective.
- From moist mulch + fungal organism: The decomposing wood chips create the damp environment this organism requires to survive and reproduce.

Engineering Task

K-2 Challenge:

Design a tall, colorful tower that bugs can see and find easily. Use craft materials to build a structure at least as tall as your hand. Make it bright and bumpy so insects notice it. Test it by placing it in your outdoor exploration area and observing if bugs visit it in 5 minutes.

3-5 Challenge:

Design and build a dispersal structure that extends 15+ cm above ground level and attracts small crawling insects using visual and tactile features. Your design must:

- Use only natural materials (twigs, mulch, leaves, bark) or recyclables (paper, cardboard).
- Include at least two different textures on the surface (smooth and bumpy).
- Incorporate a bright, high-contrast color element using plant material, food coloring, or paint.
- Remain stable when placed in a shallow soil or mulch bed for 10 minutes.
- Successfully attract at least one insect visitor during a 10-minute outdoor test.

EDP Phase Targeted

Ask / Define Problem — This photo shows a real organism solving an environmental challenge (visibility and attraction in a crowded mulch layer). Students first need to understand why this structure looks this way before they can redesign it. Asking "What problem is this mushroom solving?" anchors the entire challenge in observation of nature.

Suggested Materials

- Twigs, small branches, or wooden dowels (for structure)
- Wood mulch, bark chips, or dried leaves (for texture and ground integration)

- Bright poster paint, food coloring, or natural dyes (orange, red)
- Craft paper or tissue paper (for wrapping or attachment)
- Shallow containers or soil trays (for stability testing)

Estimated Time

Two 40-50 minute sessions:

- Session 1 (40 min): Observation, sketching, material gathering, and build.
- Session 2 (40 min): Outdoor testing, data collection on insect attraction, and reflection on design effectiveness.

Or condensed to one 60-minute session if outdoor testing occurs immediately.

Why This Works for Teachers

This task directly addresses NGSS ETS1.A (Defining Problems) by having students identify that organisms have structural features solving specific environmental challenges, then apply that thinking to human design—bridging life science and engineering naturally.