

Visible Elements in Photo



- Large pink/magenta flower with radiating petals (appears to be a zinnia or similar compound flower)
- Yellow and dark red/maroon center disk with clustered small florets
- Small brown insect (possibly a bee or beetle) visible on the yellow center
- Multiple smaller pink flowers in soft focus in the background
- Green foliage and dark soil visible around the plant base

Reasonable Inferences

- From insect on flower center: Pollinators need a stable landing platform to access pollen and nectar safely; the flower's structure must support insect weight and provide grip.
- From flower petal and center design: The radiating petals may guide pollinators toward the center resource; curved or angled surfaces help direct movement.
- From multiple flowers in garden: Plants compete for pollinator visits, so flower design affects reproductive success—a practical engineering problem in nature.

Engineering Task

K-2 Challenge:

"Build a Bug Landing Pad"

Make a flower out of paper petals and a center that a toy bug (or your finger) can land on safely without sliding off. Your petals should stick out like the pink flower in the photo. Test: Can your bug reach the yellow center without falling?

3-5 Challenge:

"Design a Pollinator-Friendly Flower Landing System"

Engineer a model flower with petals and a central landing disk that:

- Supports a 10-gram weight (marble or washers) on the center for at least 5 seconds without tipping
- Has at least 6 petals angled to guide a rolling marble toward the center
- Uses only paper, cardboard, tape, and natural materials (yarn, leaves, or twigs)

Success criteria: The marble stays centered, petals don't collapse, and the structure stands upright on a table.
Document: Which petal angle worked best?

EDP Phase Targeted

Ask / Define Problem

This phase fits because the photo shows a natural system at work—a flower successfully attracting a pollinator. Students can observe the "problem" flowers solve (how to position resources to attract and guide insects) and reverse-engineer a solution. They're not redesigning an existing engineered product; they're identifying a real biological need and imagining how structure solves it.

Suggested Materials

- Colored paper or tissue paper (pink, yellow, red)
 - Cardboard tube or paper cup (flower base)
 - Tape and glue stick
 - Marbles or washers (10g weights for testing)
 - Optional: yarn, raffia, or dried leaves for texture
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Estimated Time

K-2: 30–40 minutes (one session)
3-5: Two 30-minute sessions (design + build in session 1; test and iteration in session 2)

Why This Works for Teachers

This task directly addresses NGSS 3-5-ETS1-1 (define simple design problems reflecting a need or want) by asking students to solve a real biological challenge visible in nature, bridging life science observation with engineering thinking.