

Visible Elements in Photo



- Yellow daffodil flower (open bloom, visible stamen and petals)
- Fresh snow accumulated on leaves, stems, and flower petals
- Green leaves and unopened buds on the plant
- Weathered wooden fence/wall in soft focus background
- Mixed water states: solid (snow) and liquid (potentially melting on warmer flower petals)

Reasonable Inferences

1. From snow + green leaves + yellow flower: The plant is blooming during an unexpected cold snap or late-season frost, suggesting the delicate flower is exposed to temperature extremes and needs protection from ice/snow damage.
2. From accumulated snow on leaves and petals: The plant's surfaces are collecting and holding frozen water, creating additional weight and thermal stress that the stem must support.
3. From wooden fence context: This is an outdoor garden or natural area where plants are exposed to unpredictable weather conditions without human intervention.

Engineering Task

K-2 Challenge:

Your spring flower is surprised by snow! Design a cozy blanket or shield to keep it warm and safe from the snow and ice. You can build it from cloth, straw, sticks, or leaves. Test it by sprinkling water on it and seeing if your flower stays dry. Does your design let the flower still see sunlight?

3-5 Challenge:

Design a protective covering for early-blooming flowers that shields them from frost and accumulated snow while still allowing light and air to reach the plant. Your design must:

- Support a load of at least 50 grams (simulating snow weight) without collapsing onto the flower
- Allow at least 50% of natural light to pass through
- Be made from materials that can be reused or biodegrade
- Be removable without damaging the stem or bloom

Test by placing your prototype over a potted flower, adding weighted materials to the top, and measuring light transmission with a simple shadow test.

EDP Phase Targeted

Ask / Define Problem

This photo shows a real environmental challenge (frost-sensitive plants in unpredictable spring weather) that students can directly observe and understand. The task begins by identifying the problem—"How can we protect delicate flowers from late-season snow?"—before moving to solutions. This grounds the EDP in authentic observation.

Suggested Materials

1. Cheesecloth, burlap, or old cotton sheets
2. Straw, dry leaves, or shredded paper for insulation
3. Small twigs, popsicle sticks, or plastic straws for frame structure
4. Tape, string, or plant clips to secure covering
5. Potted spring flowers (daffodils, crocuses, or tulips) for testing

Estimated Time

Two 30-minute sessions (Session 1: observe, design, and build; Session 2: test, measure light transmission, refine design)

Why This Works for Teachers

This task directly addresses NGSS 3-5-ETS1-1 (Define a simple design problem reflecting a need or want) by anchoring engineering in observable seasonal phenomena, making the problem real and personally meaningful to students rather than abstract.