

Visible Elements in Photo



- A pelican with a long, pointed beak perched on a rock
- Water in the background (ocean or bay setting)
- The bird's streamlined body and folded wings
- A distinctive pouch visible below the beak
- The rock serving as a resting platform

Reasonable Inferences

- Long beak + water setting: The pelican uses its beak to catch fish from water, so it needs a tool designed for reaching into and gripping slippery objects underwater.
- Pouch structure: The pelican has a specialized pouch that likely helps scoop, hold, or drain water while catching prey—suggesting a container design problem.
- Rock perch: The bird needs stable resting places between hunting trips, implying the need for platforms that won't tip or collapse under weight and motion.

Engineering Task

K-2 Challenge:

Design a fishing scoop for a pelican. Make a tool using a stick, string, and a cup or net that can scoop up small objects (like foam balls or pom-poms) from a water table. Your scoop must hold at least 5 small objects at once and not spill them when you lift it out of the water. Test it and make it better if it doesn't work the first time.

3-5 Challenge:

Design a fish-catching tool inspired by the pelican's beak and pouch. Using a paper cup, dowel, and netting material, engineer a scoop that can:

- Reach at least 12 inches into a container of water
- Capture and hold at least 8 small objects (representing fish) without losing them
- Drain water effectively when lifted from the water
- Remain structurally sound through at least 10 repeated scooping cycles

Test your prototype, measure results, and redesign one component to improve performance.

EDP Phase Targeted

Ask / Define Problem — This phase fits best because the photo shows a real animal solving a real survival need (catching food from water). Students observe the problem the pelican faces and design a solution, rather than being handed a problem statement. They must identify why the beak and pouch shapes matter before building.

Suggested Materials

- Paper cups or plastic cups (for pouch structure)
- Wooden dowels or pencils (for beak/handle)
- Netting, cheesecloth, or mesh fabric (for filtering and holding)
- String or rubber bands (for assembly)
- Small foam balls, pom-poms, or craft beads (to represent fish)
- Water table, large container, or bucket

Estimated Time

45–60 minutes (one extended session or two 30-minute sessions: 15 min for design/build, 30 min for testing and redesign)

Why This Works for Teachers

This task directly addresses NGSS 3-5-ETS1-1 (Define a simple design problem reflecting a need or a want) by anchoring the engineering challenge in observable animal behavior, making the "need" tangible and biologically relevant rather than abstract.