Scavenger

Life Science | Engineering Design Process

Engineering Challenge

Visible Elements in Photo

- A large black bird (appears to be a vulture or condor) with dark plumage and a textured grey head and neck
- Grass and low vegetation covering the ground
- Rocky or gravelly soil with sparse plant growth
- The bird's posture suggests foraging or searching behavior
- Open, exposed terrain with limited shelter or shade

Reasonable Inferences

- From bird's body shape and head texture: This scavenging bird needs to access food sources on the ground efficiently; its long neck and downward posture suggest it hunts or searches in vegetation and soil.
- From sparse vegetation and rocky terrain: The landscape offers limited natural cover; animals living here must either adapt to exposure or create their own shelter solutions.
- From foraging posture: The bird's design (long legs, angled neck, keen vision) solves a real problem—reaching food in difficult terrain while maintaining awareness of surroundings.

Engineering Task

K-2 Challenge:

You are a scavenger bird looking for food in tall grass. Design and build a long-necked tool using straws, string, and paper that can help you reach down into grass clumps to find hidden treats (small pom-poms or crackers). Your tool must be at least 12 inches long and let you pick up a snack without using your hands.

3-5 Challenge:

Design a foraging tool inspired by this scavenging bird that allows a person to safely locate and retrieve small objects hidden in tall grass or leaf litter without bending or kneeling. Your tool must:
- Be at least 18 inches long
- Have a functional "neck" that can bend or angle to reach into vegetation
- Successfully pick up at least 3 small objects in under 2 minutes
- Use only natural materials (sticks, twine, leaves) or recyclables (plastic cups, straws, string)

Test your prototype in a grassy area or simulated "search zone" and measure success by speed and accuracy.

EDP Phase Targeted

Ask / Define Problem

This photo naturally invites observation of how an animal solves a real-world problem (accessing food in open terrain with limited mobility). Students start by asking: "What challenge does this bird face, and how does its body design help?" This observation-to-problem-definition sequence is the strongest entry point.

Suggested Materials

- Straws or rolled paper tubes (for the "neck" structure)
- String, twine, or yarn (for joints and flexibility)
- Small cups or baskets (for the "head" or retrieval end)
- Tape or rubber bands (for assembly)
- Pom-poms, crackers, or small foam balls (for practice objects to retrieve)

Estimated Time

K-2: 45–60 minutes (planning sketch, build, 2–3 test trials, reflection)
3-5: Two 40-minute sessions (Session 1: design, sketch, material selection; Session 2: build, test, redesign, measure results)

Why This Works for Teachers

This task directly supports NGSS 3-5-ETS1-1 (Ask questions to define engineering problems based on situational analysis) by grounding the design challenge in observable animal adaptation, making the "need" tangible and visible rather than abstract.