Shoo Bird, Shoo!

Design and build a mobile that warns birds away from a window or a building.

Instructions

Engineers design ways to protect buildings from all kinds of things: bad weather, earthquakes, and even birds. Birds can cause problems for buildings and the people coming and going from them. Birds like to roost where their droppings make a mess; they make nests in unsafe spots, where vents may open or shut on them. Worst of all, they fly straight into windows because they can’t see them.

DEFINE THE PROBLEM

1. Ask students to think about why birds are not welcome or safe around most buildings. Make a list of their ideas.

2. Explain that birds will stay away from objects that catch the light and that flutter or move in the breeze. A bird deterrent or bird preventer is something that makes a bird not want to do something—like roost right over the doorway of a building or fly into a window. Today students will design a bird deterrent in the form of a mobile.

3. Give students the specs:
   i. The mobile must have parts that sway, spin, or flutter so that birds notice the movement.
   ii. The mobile must include parts that catch sunlight and sparkle.
   iii. The mobile must move in light breezes, but not get tangled in heavy winds.
   iv. The mobile must be attractive to people because it will be placed where they can see it.

Materials

PER TEAM:
- Pencil
- Pencils and paper for drawing designs
- Scissors
- Hole punchers
- String, yarn, ribbon
- Foil pie tins and scraps of aluminum foil
- Plastic beads
- Old CDs and DVDs
- Wire shirt hangers
- Paper clips, binder rings, paper fasteners
- Stick-on rhinestones and jewels
- Single-use plastic items that can be cut up
- Optional: glue gun (with adult supervision)

TESTING MATERIALS:
- Fan with low and high settings
- Area where mobiles can be hung up for testing
BRAINSTORM SOLUTIONS

4 Decide whether each student will make their own mobile or collaborate. In either case, divide the class into teams of 2–4 students so they can go through the planning process together. Show students the materials they can use.

5 Instruct teams to experiment with the materials and sketch their design ideas.

BUILD AND TEST

6 Tell students to build their mobiles. Assure them that after their first designs have been tested, they can change and improve their mobiles.

7 To test the designs, hang up all of the mobiles where students can see them but where they won’t interfere with each other if they blow in a breeze. Turn on a fan from across the room so that all of the mobiles get a gentle breeze. Have students note which designs flutter the most. Then bring the fan a few feet in front of each mobile to give it a strong wind, and have students note which designs get tangled. Also, have students note which designs reflect light well.

EVALUATE AND REDESIGN

8 As students think about how to improve their designs, encourage them to consider how using strings of different lengths might help keep the mobiles from tangling. Ask them to consider how adding a little weight to one or more elements would affect the mobile’s balance.

9 Have students test their mobile outside on a building and, as practical, observe long enough to check whether birds have a reaction to it.

Guiding Questions

Which materials were best at catching light and sparkling?

Which designs fluttered the most without getting tangled in a strong wind?

How do you think birds would react if the mobile also made a sound?

What other mobile materials might be good for keeping birds away?
Glass windows are not only invisible to birds—they can look like inviting places to fly because they reflect the sky or trees that look nice to land in. If birds can see through the window, the space on the other side often looks safe to fly toward. Birds sometimes see their own reflections in windows, and then they try to attack the other bird they see. They don't realize it's a reflection of themselves, as they are protecting their territory or their nests from invaders.

Birds’ eyes are different from the eyes of humans. Their eyesight is a lot better than ours because their eyes have three times more sensory cells than human eyes. If eagles could read, they’d be able to read a newspaper that was a whole football field away! Birds also look at things differently because they rely on their necks to direct their heads rather than muscles to make eye movements. On the other hand, each bird eye can be looking at different things at the same time. Humans can only focus on one thing at a time.

Engineers collaborate with building designers and bird experts to construct buildings that keep birds safe by preventing them from flying into windows. They have developed ways of using shaded and/or frosted glass to make windows visible to birds but still let plenty of light in. Engineers have also created windows with patterns that birds can see but humans can’t because birds can see types of light (the ultraviolet spectrum) that are invisible to us. They have other methods for deterring birds too, such as screens, netting, overhangs, and shutters.