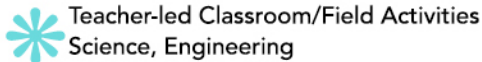


### Help the Local Habitat: Design and Build a Bird Feeder



*Students get involved in providing a little something extra for local birds.*

#### Objective:

Students learn about local birds and what they eat. They design, build, and place a simple bird feeder.

#### Students will need:

- A paper milk or juice carton, any size; one for each student or pair of students
- Scissors
- Strong twine (jute or sisal twine is best...and natural!)
- Field guide to local birds (printed or online)
- Birdseed for wild birds
- Copies of the duplicating master How to Make a Bird Feeder (one per student or pair of students)

#### Suggested time:

1 class period to make the bird feeders

#### What to do:

This activity is designed to give students an opportunity to engage in the engineering design process, using their prior knowledge and creativity to design and then build a bird feeder. See the Options note below for alternative procedures.

#### Preparation

- Collect or have students bring in the materials that can be used to construct bird feeders.
- Obtain birdseed that is appropriate for the wild birds in your region.
- Follow the instructions in How to Make a Bird Feeder to make a sample bird feeder to show the students. (You can also use this opportunity to troubleshoot or modify the design as needed for your class.)

#### Identify the Problem

1. Begin with a discussion about bird feeders: Have students ever seen a bird feeder? What did it look like? What was it made out of? Where was it? What types of birds were using it? Then introduce the idea that a bird feeder serves a purpose: What is a bird feeder for? What problems can a bird feeder help solve? Two important reasons/purposes are attracting birds to a place where you can enjoy watching them, and making sure they have enough food, especially in winter.
2. Ask students why they think there are different kinds of bird feeders and guide them to make the connection between the design and the purpose (what types of birds it feeds, what types of food it can hold, what weather it needs to withstand).

#### Design a Solution

3. Show students the materials and explain that they will be designing and building their own bird feeders using the materials and tools you have collected.
4. Have students work in pairs to use pencils and paper to sketch a design of their own for a bird feeder. The only constraint on the design is that it must

be realistic and it must be made only of the materials you have shown them. The sketch should be labeled and should show or explain:

- What materials it is made out of and how they are put together
- What tools would be needed to construct it
- What type of bird food it will hold
- Where it will be placed (e.g., on the ground, in a tree, hanging from a tree) and how it will be held up
- How the birds will use it

Guide students with questions like, "How will these materials be held together?"; "Where will the bird food go? How will it stay in the feeder?"; "Where will the birds sit while they eat?"

#### Build

5. Once you have reviewed the designs to ensure that they meet all of the criteria, allow students to collect the materials they need and build the feeders. Allow students to revise their designs as they work if they encounter problems. Make it clear that engineers encounter design problems all the time, and encourage students to come up with solutions to their problems.
6. Allow students to decorate their feeders with crayons and nontoxic paints. (Avoid using markers, which can be toxic.)

#### Test and Modify

7. When the feeders are complete, have students choose specific locations to place the feeders, around the school, in a public area in the community, or at home.
8. Encourage students to make observations about the types of birds that are using the feeders and whether or not they seem to be having any problems. If there are any problems with the feeders, how can the feeder (or location) be modified to solve those problems?

#### Options

This activity can easily be modified to better fit the time available or meet the needs of your students.

- If time is tight or if students need extra support, bypass the design stage and provide them with a copy of instructions How to Make a Bird Feeder to follow directly.
- Have students create designs, but ultimately build their bird feeders based on the instructions in How to Make a Bird Feeder
- Have groups present and then, as a class, decide on a master design for everyone to use.
- Have students do research on local birds that are likely to be attracted to bird feeders and identify what kinds of birdseed those birds prefer.
- Begin by allowing students to consider using any material for the design, and then have them modify the design to use easily obtainable (preferably recycled or reused) materials only.

Formalize the observation stage such that students can compare the success of different designs.