

Build a Birdhouse

Grade: 1-2

Time: 1 hr

Activity Overview :

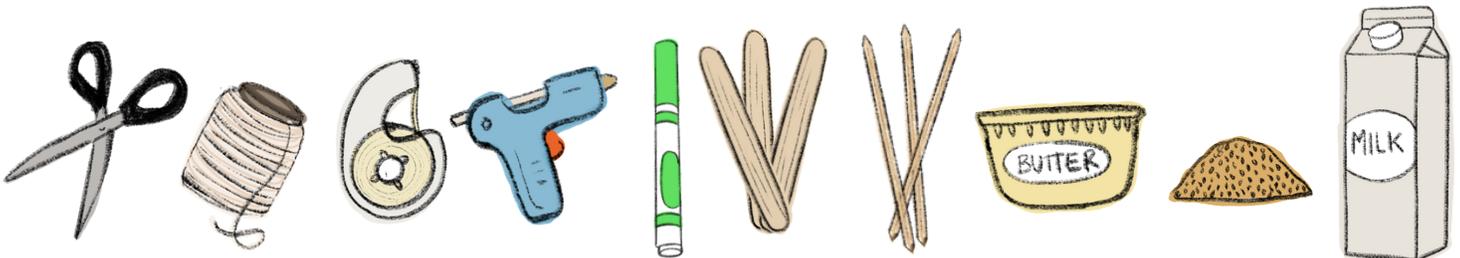
Today we will build a birdhouse for our backyards! We will first learn about how a birdhouse is a **structure** and the different types of **structural features** that go into making a birdhouse such as **beams, columns, frames, and braces**. We will also learn about the different types of birds we can see in our garden such as a chickadee, sparrows, woodpeckers and many more.

Before we begin, think about the following questions:

- What kinds of birds do you usually see in your backyard?
- What are some structures you see in everyday life?

Materials:

- Markers or paint (for decorations)
- String
- Scissors
- Birdfeed (seeds, stale bread, raisins)
- 2 plastic containers (yogurt, butter, sour cream, etc.)
- Tape
- Hot glue or white glue
- Popsicle sticks, skewers, or sticks from the garden, plastic straw (any of these will work - 8 or more)
- Milk carton (If you want to make version 2)

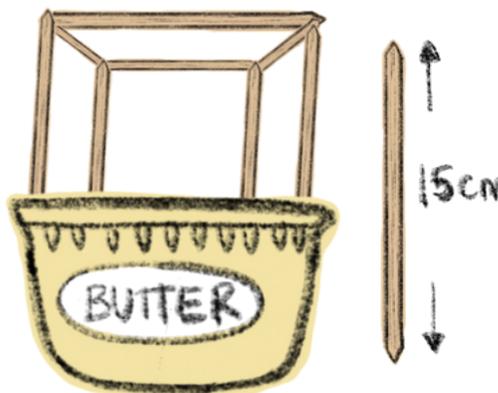


Don't worry if you don't have all these supplies. Experiment with other everyday items and see what you can build!

Activity (Version 1):

- 1 Thoroughly clean out two empty plastic containers (yogurt, butter etc.) these will be the base and roof of your birdhouse structure.
- 2 To create the open walls of the birdhouse we will start by making four columns.
- 3 Take a sturdy material such as popsicle sticks, plastic straws, skewers, or sticks from the garden and cut them to a length of 15 cm.
- 4 Tape or glue the popsicle sticks/skewers/sticks/straws securely to each corner of one of the plastic containers (if your container is round, draw a square/rectangle on the inside to be your guide), these will be the columns of your birdhouse.
- 5 Cut out four more popsicle sticks/skewers/sticks/straws to make the beams of your structure, the length of these segments will depend on the size of your container and how far apart the columns are from one another.
- 6 Tape or glue the four beams horizontally on top of the columns to make the frame of your structure.
- 7 To create the roof of your birdhouse, take your second plastic container, turn it upside-down, and attach it (using tape or glue) to the top of the frame you made. Decorate your birdhouse using markers or paint.
- 8 Attach a string to the roof by making two holes next to each other (on the top of the container) and threading the string through, tie the two ends of the string together and hang the birdhouse.
- 9 Place bird feed into your birdhouse and hang it up outside. See what birds visit your birdhouse! Use the "Bird Checklist" to keep track of what birds visit your birdhouse!

Step 3-6

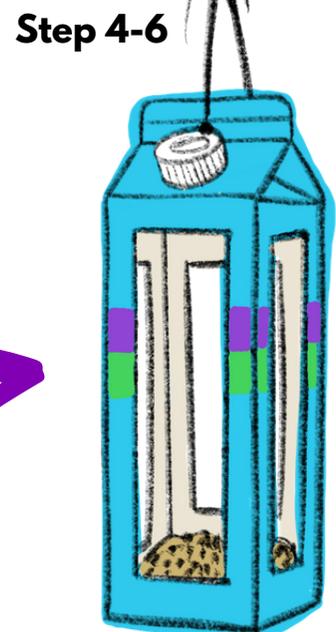
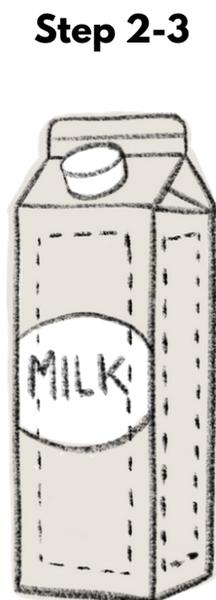
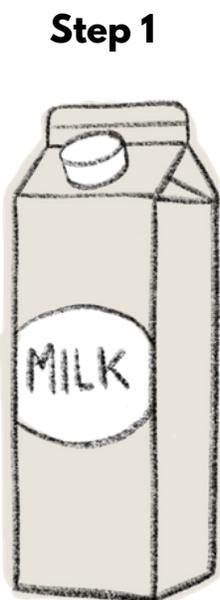


Step 7-9



Activity (Version 2):

- 1** Thoroughly wash out an empty cardboard milk carton of any size.
- 2** On each face of the milk carton, draw a 3 cm rectangular border from the edge of the face.
- 3** With scissors, cut out the inner rectangle on each face, leaving the border intact, this creates a frame for your structure that is made up of a base (where the bird feed will go), columns (what holds the top and bottom of your birdhouse together) and a roof.
- 4** If you want to cut out different shapes out of the walls of your birdhouse, go for it! Get creative with the look of your birdhouse. Decorate your birdhouse using markers or paint.
- 5** Poke a hole at the top of the milk carton and thread a string through it, tie the two ends of the string together and hang the birdhouse.
- 6** Place bird feed in the base of your birdhouse and hang it up outside. See what birds visit your birdhouse! Use the "Bird Checklist" to keep track of what birds visit your birdhouse!



Engineering and Science Connections

Biologists are scientists who try to understand the natural world by studying biology. **Biology** is the study of living things such as plants, animals, fungi, algae, bacteria, and viruses.

Ornithologists are **biologists** who focus on learning about birds. They study bird songs, flying patterns, the appearance of a bird, and migration patterns. **Migration** is when an animal travels long distances in search of a new home as the seasons change.

Common birds you may see in Ontario include cardinals, woodpeckers, chickadees, sparrows, and blue jays.

Engineers use math, science and technology to design solutions to everyday problems or needs. **Civil engineers** specifically design and build structures, such as schools, apartment buildings, hospitals, and transportation routes such as highways, roundabouts, and roads.

Structures are made when you take separate 3D pieces and put them together, for example, you can make a structure out of pieces of LEGO, and you made a structure today, a birdhouse! Structures can hold weight, like the weight of the seeds in your birdhouse. Examples of structures are the school you go to, houses, skyscrapers, or tunnels you drive through.

The pieces that structures are made out of are called **structural components**. We used structural components to build our birdhouse today such as **beams, columns, frames**, and **braces**. **Beams** are straight, horizontal components that can bend. **Columns** are straight, vertical components that can be compressed (squished down). A simple **frame** is made when you place one beam on top of two columns. **Braces** are straight components that are placed diagonally between a beam and column (a frame) and they help make a structure more stable and strong. Braces can be placed at the corners of a frame.

Extensions:

Make your birdhouse extra strong by adding corner braces!

If you made either the Version 1 or 2 birdhouses you can add corner braces.

- To add extra strength and support to the structure we will add corner braces to the birdhouse.
- Cut out eight 3 cm segments of popsicle stick/skewer/stick to make the braces.
- Tape or glue each brace diagonally to all top corners of the frame (one end of the brace attached to a column and the other end attached to a beam).

Make a triangular roof for your birdhouse!

If you made the Version 1 birdhouse, you can make a triangular roof.

- To make a triangular roof of your birdhouse cut out four pieces of popsicle stick/skewer/straw (the same length of your beams).
- On the top of one wall, make a triangle using the segments you cut out in step 1 (the beam is the bottom of the triangle and the two new segments are the other sides), securely attaching the segments to the frame using tape or glue.
- Repeat step 2 on the wall directly opposite to the one you built the first triangle on.
- Cut out one final popsicle stick/skewer/stick that is the length of your beams and attach one end to the top of the first triangle and the other end to the top of the second triangle, this will give you a frame to attach your roof.
- Cut out two square pieces out of your plastic container (the sides of the square should be the same length as your beams), this will make the roof.
- Making a triangular or "tent" shape with the two pieces of plastic, attach them to the triangular frame you made, now you have a triangular roof!

Make your own bird feed!

Mix the following ingredients to make a bird feed that is sure to attract lots of birds!

- 1 cup of chopped peanuts
- 1 cup of sunflower seeds
- ½ cup of cracked corn
- ⅓ cup of dried fruit

Share your creations!

Don't forget to share your experiments and creations with us! We would love to see what you've made. You can Email us at: esqinfo@uwaterloo.ca or send us a message/tag us on our social media!

Facebook: @uwengoutreach

Twitter: @UWEngOutreach

Instagram: @uwengoutreach

Thanks for exploring, discovering, and learning with us!

3, 2, 1 Done!

3 - Write or draw 3 things you learned from this activity

2 - Write or draw 2 things you found super interesting or cool and want to learn more about

1 - Do you have any questions about the activity? Did something make you wonder...what if? how? or why?