Any Shape Box

reDiscover Center

Arts

Tags: Art, Creative, Creative Thinking, Creativity, Critical & Creative Thinking, Engineering, Sculpture, STEM, Sustainability

35 mins

Grades 3 - 12

About this Activity

In this activity, students will learn how to make an Any Shape Box using cardboard and simple tools by understanding the flutes inside cardboard and how to work with them.

Learning Objectives

Students will:

- Dissect cardboard and understand flutes and layers on cardboard.
- Learn how to score cardboard using the canary cutter.

Materials

- Tools for each student and teacher:
    - Canary Cutter
    - Screwdriver
    - Scissors

- Safety Gloves
- Liquid glue and tape OR Hot Glue Gun

- Materials for each student and teacher:
  - Cardboard
  - One (1) random item they own that they can make an “any shape box” for. (no more than 6 x 6 x 3 in. in dimension. It shouldn’t be much bigger or smaller than your outstretched hand.)

Worksheets and Files

- PDF Presentation: Any Shape Box

  Links:

  Download the "Any Shape Box" PDF

Preparation

- Read and familiarize yourself with the activity.
  - Instructors should practice making the Any Shape Box by making 1-2 examples prior to the class. This will allow students to have samples to refer to while they are making their own and for instructors to better understand the activity and techniques they are teaching.

  Gather Materials for this project
  - Collect and prepare materials a few days before working on this activity: Cardboard Boxes

  Go through Tool Training for the Canary Cutter and Hot Glue with all students if using the tool. Scroll down for related Pro-Tips to train students with the required tools

Activity Steps

1. Introduce to your students that in this activity, they are creating an Any Shape Box to hold irregularly shaped items. These boxes will have flat tops and bottoms and irregular sides shaped to match the item.

   Tip: Show students an example and allow them to examine what makes an any shape box.

2. Have students cut off a small piece of cardboard. Start by having a discussion about the material and let them tear the layers apart.

    - What's cardboard really made of? Corrugated Cardboard is essentially made of layers of paper.
    - In 1-Ply Cardboard, there's 3 layers. Two flat sheets sandwiching a layer of Flutes.
    - Flutes are the long thin holes that form waves in the middle of the flat paper layers in cardboard. Corrugated means wavy. The waves make it really strong in one direction, and not as strong in the other direction. The sides of the cardboard keep it from bending, but what if you WANT it to bend?

3. Cut out another piece of cardboard from a box, maybe one of the folded sides. Use a screwdriver to score on one layer of the cardboard. Identify where the flutes are inside your corrugated cardboard and run your screwdriver along one, breaking that side of the cardboard.

    Tip: Make sure you protect your table workspace so you don't scratch the surface.

4. Using these techniques, make a really weird 3D shape!

    - You'll need something that is a strange shape. It can have curves or straight lines, or both. It shouldn't be much bigger or smaller than your outstretched hand.
    - A toy is a good idea, or a glue bottle, or a tube of toothpaste. What else can you find?

5. Start by creating the Top and Bottom of the box. Trace an outline of your item on a piece of cardboard. Do this two times.

6. Cut a long strip of cardboard. Bend the strip into the irregular shape around the perimeter of your cut pieces. Use the scoring techniques to help bend the cardboard.

7. Attach the strip to your bottom piece. Use L-braces in our Cardboard connections Pro Tips to attach walls to the bottom piece. Use adhesives like tape and/or hot glue.

8. Attach the top lid with a hinge made out of an L-Brace (or two) or using tape.

Variations

1. After having the bottom piece connected to the side strips, make a lid with a second perimeter just inside the cut edge so it will nestle in the lower section.