

Plastic Upcycling Activity

Objectives

Students will be able to identify the benefits and consequences of plastic properties and functions. Students will explore how to alter and upcycle waste plastics into new repurposed items with value as a solution to the plastic pollution problem.

Introduction

Plastic has become an inseparable and integral part of our lives. Its strength, versatility, long life, low weight, and low cost are the factors behind many innovations and advancements in today's society such as food safety, transportation, electronics, and medical equipment. However, these same properties are the reasons that plastic can cause so much harm to our environment. For example, highly durable plastics can be persistent for years, brittle plastics can break apart into microplastics, lightweight plastics can travel far distances, and the different colors and shapes of plastics can mimic food for wildlife. Walk students through the properties and characteristics of a commonly littered plastic item, the plastic bag. Help students upcycle this 'waste' plastic to create a sturdier, useful, and personalized product that they will not want to throw away.

Next Generation Science Standards

Science and Engineering Practices

- Constructing explanations and designing solutions

Crosscutting Concepts

- Structure and function
- Stability and change

Core Ideas

- PS1.A: Structure and properties of matter
- PS1.B: Chemical reactions
- ETS2.B: Influence of science, engineering and technology on society and the natural world
- ESS3.C: Human impacts on Earth systems

Supplies

- Plastic bags and plastic film (Review the [Oregon Sea Grant Plastic Upcycling Activity](#) for specifics)
- Roll of parchment paper
- Scissors
- Iron (thrift store quality)
- Ironing board or towel
- Sewing machine (if desired)
- Accessory materials such as dowels, straps, etc.
- Glue gun (optional)

Procedure

1. Intro. Discuss with students the structure and function as well as the pros and cons of plastic bags. Some prompting questions to ask students are:

- What is the purpose of a plastic bag?
- What is the material like? Is it hard? Bendable? See through?
- What are the benefits of plastic bags?
- What are the consequences?
- How long do you think a plastic bag is used for?
- How many do you think you use a day? Week? Year?
- How can plastic bags be harmful?
- Is it recyclable?
 - Explain to students that because plastic bags are flimsy and lightweight, they are difficult to recycle, and often aren't accepted in curbside recycling. They clog up sorting machines and have the potential to cause the machinery to catch on fire. This means that all plastic bags are often either landfilled and add to the growing trash problem, or escape into the environment.

2. What else could we do with it?

- One solution to the marine debris problem is to *upcycle*, also known as creative reuse. This is the process of transforming waste materials, useless, or unwanted products such as plastic bags, into new materials or products perceived to be of greater quality. Upcycling prolongs an object's or material's life before being thrown away and having a chance to end up as marine debris.
- Follow [Oregon Sea Grant Plastic Upcycling Activity](#) for step by step instructions on how to alter the properties of discarded unrecyclable plastic bags into sturdy, artistic, useful products that hold value and are unlikely to be thrown away.
 - *Note:* As this project involves the use of an iron to create your plastic "fabric," be sure you have some extra classroom volunteers or mentors to support student safety.

3. Discussion. During this lesson students learned how to be resourceful by using objects usually thrown away to create something new.

- What properties of plastic allowed us to do this? (e.g., durability, transparency, etc.)
- How does this help the marine debris problem?
- What are other materials that could be repurposed into something new?

4. Assessment. Have students present their work to the class or community and explain how many bags they repurposed to make their new item. Ask them to go through the process of what they used, how they chose their materials, and the idea behind their art.

5. Extension.

- Build on this project by having students design "clothes" out of repurposed materials. (You can even host a "trashion show" with your upcycled creations!)

Taking it to the Streets!

Urban Trash Educational Toolkit

From Trash to Treasure

- Have students share their art pieces at a school-wide event or a community event to explain their art and its purpose to a wider audience.
- Think about ways to upcycle other commonly thrown away plastic items into new items of value. Check out the additional lesson titled “Upcycled Arts and Crafts” for more ideas.

