Activity: Cookie Mining

Grades: k-5
Length: 60 minutes

Concepts: Resources, Conservation, Recycling
Materials: chocolate chip cookie, toothpick, paper clip or other utensils, scratch paper

Background Information:

What are Resources?

Resources are the natural things that people need to live, work, and play. Clean water, clean air, oil to make fuel for cars and trucks, and trees to make paper are all resources. Resources are limited, or scarce, meaning that they may run out. That's why we should use conservation and recycling to try not to waste them.

What resources do you use in a day? Generally there are a lot of resources we use day to day that are limited in nature. From the paper to oil to the materials in plastics, many of the things around our homes use some type of resources. To help ensure that we have these resources for a long time, we may consider reducing (what we use), reusing (products), and recycling.

What is Conservation?

Conservation is how scientists try to use as small amounts of our resources as possible. With no waste, the supply of resources lasts longer. Scientists use barrels of oil to make everything from gas for cars to bubble gum so that none of the oil gets thrown away. Also, they try to use the leftovers of the corn plant to make energy.

What is Recycling?

Recycling means to reuse items that would normally be thrown away. Soda cans, batteries, plastic bottles, and paper can be recycled in special factories into new items. This keeps more resources from being used to make those new items, and keeps these things out of our landfills.

Learn more about these resources and where they come from: https://youtu.be/8LfD_EKze2M

Think about how materials go from the ground or its natural state to finished goods.

Activity:

Start by reading through the *Background Information*.

What's the Problem: Without using your hands to hold the cookie, mine the chocolate chips out of your cookie

Explore the Constraints: Just like engineers and other professionals, you don't have all the time or tools in the world to work with. Give yourself five minutes to mine and 2 tools (toothpick, paperclip, or other utensils).

Design your Solution: Think about how you are going to get the chocolate chips out of the cookie? Are you going to use lots of force? Or are you going to be gentle? How might you find the chocolate chips deep in the cookie?

Create: If you choose, take a moment to use some scratch paper and cut out a cookie shape along with some chocolate chips to practice your technique.

Try it Out: Make sure you have an adult helping you with this activity. Grab your cookie and tools and get to work. Remember you have five minutes to mine the chocolate chips out of the cookie. Make sure to save all parts of the cookie. You are wanting to try to make sure you keep as much of the chocolate together in their original form (chip) as possible.

Think about it: Who had the most chocolate chips? Could you see all the chocolate chips before you started? Is your cookie destroyed? What if the cookie was the land that we were standing on? Would we need to relocate? Would you be more careful if you did it again when you consider your cookie like the Earth?

Returning Resources to the ground: Look at your cookie and the chocolate chips, do you think you would be able to return them to the cookie again?

Reading and Resources:

Books

- *What A Waste: Trash, Recycling, and Protecting Our Planet* by Jess French
- *Compost Stew: An A to Z Recipe for the Earth* by Mary McKenna Siddals
- *Why Should I Recycle?* By Jen Green
- *Michael Recycle* by Ellie Bethel
- *Our House Is on Fire: Greta Thunberg's Call to Save the Planet* by Jeanette Winter

Videos

- Reduce, Reuse and Recycle, to enjoy a better life | Educational Video for Kids
https://youtu.be/OasbYWF4_S8
- Cookie Mining: Ore Production and Cost-benefit Analysis
https://youtu.be/ceyxyDV_WLw
- *What really happens to the plastic you throw away - Emma Bryce*
https://youtu.be/_6xlNyWPpB8

Check out more great resources at www.isek.iastate.edu!
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