

Renewable Energy: Pizza Box Ovens

Eco-Schools Topic:
Renewable Energy

Grade Level:
Grades 1-8

Standards:
N/A

Guiding Question:
How is energy produced?

Key Questions, Attitudes and Behaviors to Teach:

- I would like to see solar panels on my home and school (A)
- What kind of renewable energy sources do we have in Virginia? Name one. (K)

Lesson Objectives:

- Students learn about alternative energy

Materials:

- Aluminum foil/chip bags
- Plastic wrap
- Popsicle stick/straw
- Black paper
- pizza boxes
- scissors
- glue
- S'mores ingredients (graham crackers, dark chocolate, vegan marshmallows)
 - (Note: send the receipts to ESLI to be reimbursed!)

Prep:

- Collect pizza boxes (from Dominos)
- Collect chip bags with reflective material on the inside OR aluminum foil
- Cut open and wash the chip bags so that they form clean and shiny rectangles (not done in this particular session, but should be done!!)
- Measure about an inch from the side of each edge of the pizza lids, and cut the three edges that are not on the fold
- Collect popsicle sticks or straws

Engaging Intro

- Here are some questions to review (can be done during intro, or after solar panels have been built): For more info look at https://www.eia.gov/kids/energy.cfm?page=solar_home-basics
 - What is nonrenewable energy?
 - Energy sources that can NOT be replenished (made again) in a short period of time (crude oil, natural gas, coal, uranium)
 - What is renewable energy?
 - Energy sources that can be replenished (sun, wind, water are all sources)



- How does solar energy work?
 - A photovoltaic cell, solar cell converts sunlight directly into energy
- Why is solar energy good? What are limitations?
 - Good: Does not produce air pollutants or CO₂, solar energy on buildings have minimal effect on environment
 - Limitations: amount of sunlight reaching earth's surface is not consistent, storage is hard, large space needed to absorb useful amount of energy

Exploratory Activities (OUTSIDE) (30 minutes)

- Make a Pizza Box Oven <https://www.youtube.com/watch?v=xbwliZJiHe8>
- Pollution Tag
 - Take the kids to a nearby area to play a game
 - There will be two or three pollutants, depending on the number of kids (the pollutants should probably be college students). These pollutants can each have a name- oil, coal, gas, etc.
 - All of the students are renewable energy (they can pick their favorite- we went over wind, water and sun for the most part)
 - If a pollutant tags a kid, they become polluted and fall to the ground, until a renewable energy comes along and cleans them. They are now free to run around again.
 - It's a never ending game of fun!
 - At the end of the game, go over it quickly and how it applies to renewable energy
- Now, the kids can go back and check on their smores. They probably won't be VERY cooked because of the short amount of time/makeshift oven but hype it up for them and they'll probably be excited anyways!

