Wind Energy

LESSON PLAN

NEXT GENERATION SCIENCE STANDARDS

4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*
4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

OBJECTIVES

The student will be able to understand how a wind turbine converts wind energy to electrical energy.
The student will be able to create their own "wind" powered car and explain how the wind energy converts to mechanical energy

ACTIVITIES

- Students create wind-powered cars using paper, cardboard, straws, paper clips and other materials from around the class, let them get creative!
- Students make observations about the direction of movement compared to air flow, speed of vehicle compared to airflow.
- Journal their observations.
- Bring attention to the Idea that people have to make decisions based on where to put wind farms what what directions the windmills should face In order to get the most wind.
- Bring attention to how the wind from the student's blowing propels the vehicle forward by turning the wheels. Question how the wheels turn If we are not blowing directly on the wheels.
- Discuss the conversion of wind energy from our breath to mechanical energy of the wheels turning and compare the wheels turning to the blades of a turbine turning.

OPPORTUNITIES FOR DIFFERENTIATION

YOUNGER STUDENTS

- Students can get help from an adult to create their wind mobiles
- Students can get help from an adult to do research
- Students can look up where the closest wind farm Is to them.

OLDER STUDENTS

- Students can watch this video In order to understand the the conversion of wind energy to mechanical energy to electrical energy: https://www.youtube.com/watch?v=DILJJwsFl3w
- Students can research and create a pros and cons list for wind energy