For students & educators

Camp Fire
MINNESOTA

My nature connection

WIND ENERGY

GRADES: 1+
TIME: 50-60 min.

STUDENTS WILL:

1. Learn about wind energy
2. Create wind pinwheel and measure the wind energy in an outdoor space

WHAT YOU'LL NEED

Hat and gloves if it's cold outside
Comfortable shoes
Construction paper
Pencil or a dowel
Scissors
Thumbtacks

ACTIVITY

INTRODUCTION

Energy, put simply, is the ability to do things. In order for us as humans to get energy, we need to eat food. Machines and technology get energy from electricity that comes from either burning fossil fuels, or from renewable energy sources like solar or wind power.

Wind is a renewable energy source, meaning it will never run out, making it a sustainable option for the future of energy.

Harnessing the power of the wind is nothing new. For hundreds of years we've been using windmills to crush grain and pump water. Even before that sail boats harnessed the power of wind to cross large bodies of water.

Watch the video that accompanies this lesson!

SETTING
Indoors and Outdoors

Today, one of the most important uses of wind is wind turbines. These large structures use the wind to spin propellers which, inn turn, spin the gears of a generator that creates electricity. This electricity is then sent through power lines to places like your home or school.

However, wind turbines can't be built everywhere. One of wind energy's biggest obstacles is location. Not every place gets enough wind to spin the blades, meaning only the windiest spots can use wind as an energy source..

To find the best places to build wind turbines, scientists and engineers must go out and test different locations for wind speed, just like you'll be doing today.

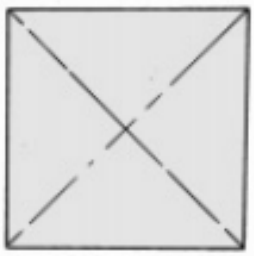
WIND PINWHEELS

Today we will be making pinwheels to test the wind speed at different locations outside. See the next page for step-by-step instructions on how to construct your pinwheel.

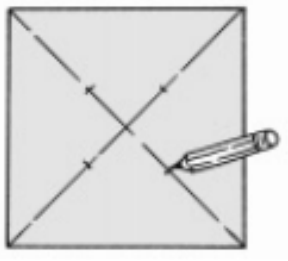
If your pinwheel spins quickly, it means there are high amounts of wind energy present. A pinwheel that spins more slowly means lower amounts of wind energy.

After your pinwheel is completed, head outside with a notebook. Hold up your pinwheel at different spots either in your backyard or your neighborhood and record your observations on wind speed.

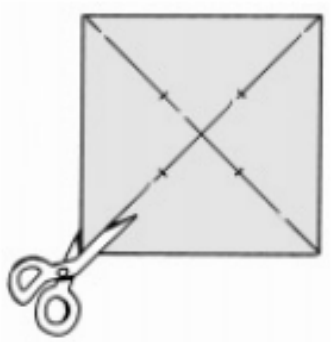
1. Begin with a square of paper.



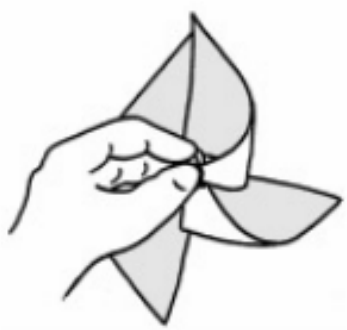
2. Fold your square, corner to corner, then unfold.

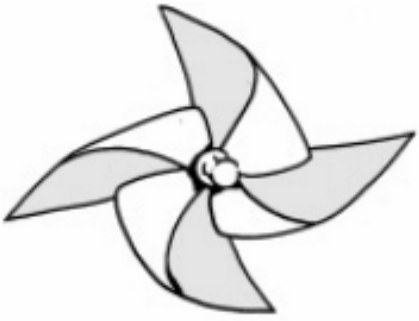


3. Make a pencil mark about 1/3 of the way from center.



4. Cut along fold lines. Stop at your pencil mark.

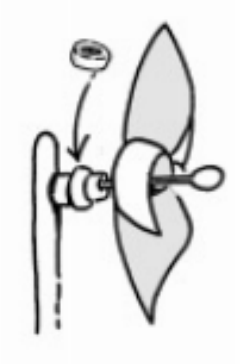




5. Bring every other point into the center and stick a pin through all four points.

6. Turn your pinswheel over - make sure the pin pokes through in the exact center.

7. Roll the pin around in little circles to enlarge the hole a little. This guarantees your pinwheel will spin freely



8. Stick the pin into a thin dowel.

Hint: Separate your pinwheel from the dowel with two or three beads. Stick the pin through the beads first then - into the dowel.

TIP:
Instead of using a dowel, you can also pin your pinwheel to the eraser of a pencil.

CONNECTING WITH QUESTIONS

After you've tested multiple spots, reflect on your findings by answering the following question in notebook or journal.

What did all the windy spots have in common?

Were there any spots with no wind at all? If yes, why do you think that is? (Think about location, time of day, obstacles).

Where would you build a wind turbine to generate the most electricity?

SOURCES REFERENCED

Pinwheel creation instructions:
http://www.leslietryon.com/3dcolorcutout/makepinw/makepinwheel.html

TELL US WHAT YOU THINK!

take a short survey at: campfiremn.org/mynatureconnection

or here: Kids Survey - click here | Teachers/Parents Survey - click here

EDUCATION STANDARDS

Social Emotional Learning Competency: Self-Awareness, Social Awareness

Grade Level	Science Education Standard
Grade 1	1.2.1 Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions and will organize and collect data to provide evidence to support claims the students make about phenomena.
Grade 2	1.2.1 Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions and will organize and collect data to provide evidence to support claims the students make about phenomena.
Grade 3	1.2.1 Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions and will organize and collect data to provide evidence to support claims the students make about phenomena.
Grade 4	1.2.1 Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions and will organize and collect data to provide evidence to support claims the students make about phenomena.
Grade 5	1.2.1 Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions and will organize and collect data to provide evidence to support claims the students make about phenomena.
Grade 6	2.1.1 Students will be able to represent observations and data in order to recognize patterns in the data, the meaning of those patterns, and possible relationships between variables.
Grade 7	2.1.1 Students will be able to represent observations and data in order to recognize patterns in the data, the meaning of those patterns, and possible relationships between variables.
Grade 8	2.1.1 Students will be able to represent observations and data in order to recognize patterns in the data, the meaning of those patterns, and possible relationships between variables.
Grade 9-12	2.1.1 Students will be able to represent observations and data in order to recognize patterns in the data, the meaning of those patterns, and possible relationships between variables.