

Windmills

Second Grade

Activity: 1

Time: 1 Class Period

General Description

Students will work in groups to design and build a model of a working windmill.

Objectives

Students will explain how windmills demonstrate the use of energy.

Students will identify the components of a windmill.

Arizona State Standards

SC02 S1C2 PO1 Demonstrate safe behavior and appropriate procedures (e.g., use of instruments, materials, organisms) in all science inquiry

SC02 S1C2 PO4 Record data from guided investigations in an organized and appropriate format (e.g., lab book, log, notebook, chart paper)

SC02 S2C2 PO1 Identify components of familiar systems (e.g., organs of the digestive system, bicycle)

SC02 S2C2 PO2 Identify the following characteristics of a system:

- consists of multiple parts or subsystems
- parts work interdependently

SC02 S3C2 PO1 Analyze how various technologies impact aspects of people's lives (e.g., entertainment, medicine, transportation, communication)

SC02 S3C2 PO2 Describe important technological contributions made by people, past and present:

- automobile – Henry Ford
- airplane – Wilbur and Orville Wright
- telephone – Alexander G. Bell

W02 S3C2 PO1 Write expository texts (e.g., labels, lists, observations, journals)

R02 S3C2 PO1 Follow a set of written multi-step directions

Teacher Background

Wind is a less expensive and unlimited source of power. As long ago as the 12th century, people have used it to pump water and grind grain. Today it is being used to generate electricity. Windmills for generating electricity have a propeller- type wheel with two or three blades which whirl rapidly. The drive shaft operates an electric generator.

Materials (per student)

Pencils or straws

Tacks

Activity Card 2-1

Paper cups and plates

Tape

Procedure/Exploration

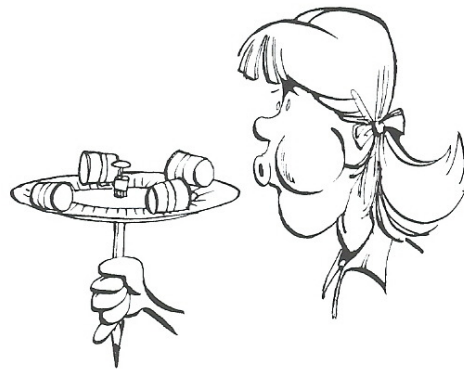
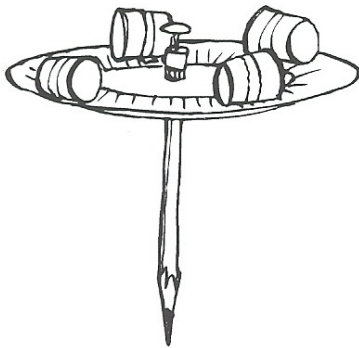
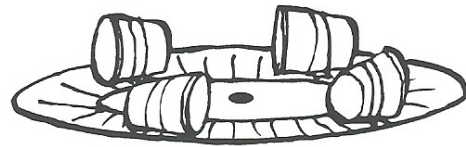
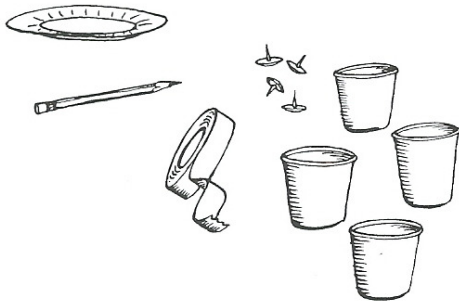
1. Collect books or pictures of windmills.
2. Divide the students into groups. Have available materials for each group to make windmill plates - one paper plate, four paper cups, tacks, pencils, tape.
3. Provide paper for recording and designing.
4. Provide copies of Activity Card 2-1.
5. Have the children construct a windmill plate by using the either the example on Activity Card 2-1 or design their own windmill.
6. Have them test the windmills. If they've designed their own, which design works best?
7. Explain to the students that work is done when a force moves an object. Question: How can we make our windmill move?
8. Energy is needed to do work. Question: What is the source of energy needed to move the windmill?
9. Who needs the wind to help them do their job? (Farmer - to pump water, weatherman, airplane pilot, child - to fly a kite, etc.)
10. The students will record the results and explain the changes they would make to cause their windmill to work better.

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Activity Card: 2-1

Student's Name:

Date:



***"Why does this
wheel move?
From where does
the energy come?"***

APS Power Posse™