STEM Program

Water Wheels

Water and Hydro-Energy

Did you know you can power things with water? Think old mills or new hydroelectric power plants. Here's a link to some other existing activities: [How To Make A Water Wheel - Little Bins for Little Hands]

Suited to Section

Joey Scouts | Cub Scouts | Scouts | Venturer Scouts | Rover Scouts

Challenge Area

COMMUNITY | PERSONAL GROWTH | OUTDOORS | CREATIVE

Key SPICES Growth

SOCIAL | PHYSICAL | INTELLECTUAL | CHARACTER | EMOTIONAL | SPIRITUAL

Likely Scout Method Elements

COMMUNITY INVOLVEMENT | LEARNING BY DOING | NATURE AND THE OUTDOORS | PATROL SYSTEM

PERSONAL PROGRESSION | PROMISE AND LAW | SYMBOLIC FRAMEWORK | YOUTH LEADING, ADULTS SUPPORTING

STEM Program

Water Wheels

Plan

Materials needed:

1. 2 Paper plates
2. Scissors/sharp skewer
3. Straw
4. Tape
5. Small paper or plastic cups
6. Hose and bucket or sink and tap

Do

1. Poke a hole in the centre of both paper plates, the size of your straw. (Make sure the hole is in the exact centre of the plate).
2. Tape four paper/plastic cups to the back of a paper plate as in the first picture.
3. Tape the second plate to the other side of your paper cups.
4. Thread the straw through the holes you have made in the plates as in picture 2. You do not need to tape the second plate on.
5. Check to make sure your cups can spin on the straw.
6. Hold your water wheel straw firmly under a slow stream of water and watch the action. This could be under a running tap, a hose or another person pouring some water.

Picture 1

Picture 2

Important notes:

1. The straw must be in the middle of plate otherwise it will not spin evenly.
2. Both paper and plastic cups work. Why not try making both and compare the difference?
3. Both paper and plastic straws work too but make sure they are sturdy enough to match the cups used.
4. Adult assistance required for younger section to create the hole for the straw.

Review

A water wheel is a machine for converting the energy of flowing or falling water into useful forms of power, often in a watermill. A water wheel consists of a wheel (usually constructed from wood or metal), with a number of blades or buckets arranged on the outside rim forming the driving car. Water wheels were still in commercial use well into the 20th century, but they are no longer in common use. Uses included milling flour in gristmills, grinding wood into pulp for papermaking, hammering wrought iron, machining, ore crushing and pounding fibre for use in the manufacture of cloth. – Wikipedia

In this experiment the water tumbles out of the hose or top, pushed against the cups which tips and spins the plate.

STEM Program

Water Wheels

Environmental Tips

- For sustainability consider only using plastic cups and straws if you have some in your scout stores to use up. If you are buying supplies for this activity, please only consider using paper products.
- Be water wise and catch all used water in a container to use for watering gardens, washing up or other appropriate uses.

Variations

- For Scouts, Venturers and Rovers: Could you create a water wheel to power something?
- What other materials could you use to make a water wheel?
- What about an SIA to make a water wheel that could power something useful for camping?

Safety Tips

- Use scissors/sharp skewer with age-appropriate supervision.

SciScouts Physics of Waves

The SciScouts Physics of Waves is a National Science Week project, undertaken in collaboration with Fizzics Education. These instructions were prepared by Scouts for Scouts. This National Science Week project is supported by the Australian Government.

Scouting has always been strong on STEM skills. Maths to calculate catering quantities and navigate, the science of water purification, the physics of abseiling, and the engineering of pioneering structures – they all have their place. In the current program for our youth members, STEM and Innovation forms one of six Special Interest Areas that enable Scouts to set goals and pursue their own ideas.

SciScouts PHYSICS

Fizzics Education Since 2004 Innovative Science Shows & Workshops!

national science week 2022

An Australian Government Initiative

Inspiring AUSTRALIA