Clean Growth
Wind Power

PRACTICAL PROJECT

Activity created by

PRACTICAL ACTION
Technology challenging poverty

Project brief

In this project you will investigate wind power as a sustainable energy source and design a simple wind turbine capable of lifting a cup off the floor up to bench height.

Over a third of the world's population have no access to electricity. Because it is vital in lifting people out of poverty, the UN identified affordable and renewable energy as one of the Global Goals to solve poverty by 2030.

List all the things you use electricity for in a typical day. Think about all the different ways in which electricity is generated, including renewable energy. Do some research to find out more about the advantages and disadvantages of different sources.

Use your STEM skills to design a simple machine that uses wind (from a hairdryer set to cold) as the power to turn blades and lift a cup off the floor. Think about the design of the blades, how to attach the blades to a shaft and how to attach your machine to the desk.

Test your machine then try adjusting size, number, shape thickness and angle of the blades and test again. After each test, record what works and what could be improved. Think about how to make testing different designs a fair test, e.g. ensuring the hairdryer is a fixed distance away from the blades.

How could you make your design more sustainable, for example, by changing the materials you used or the amount of material?

Things to think about

- What happens when you increase the size, shape, thickness, angle or number of the blades?
- Could you rely solely on wind power to generate electricity for your home? If not, why?
- What materials could you use for a full-size version?
- Where would be the best place for a wind turbine in your school or local area?
- How do you think access to energy would change the lives of people living in the mountains of Nepal?

Useful resources

- practicalaction.org/energy-and-the-global-goals
- practicalaction.org/energy
- practicalaction.org/global-project-ideas
- globalgoals.org/7-affordable-and-clean-energy
- youtu.be/usISdE-WSWU

Materials

- Scrap card
- Sellotape
- Masking tape
- Blu tack
- Split pins
- Pencils
- Scissors
- String
- Paper/plastic cup
- Weights (gram weights or pennies)

Health and safety

To avoid any accidents, make sure you stick to the following health and safety guidelines before getting started:

- find out if any of the materials, equipment or methods are hazardous using science.cleapss.org.uk/Resources/Student-Safety-Sheets/
- assess the risks (think about what could go wrong and how serious it might be);
- Ensure the hairdryer is set to cold
- decide what you need to do to reduce any risks (such as wearing personal protective equipment, knowing how to deal with emergencies and so on);
- make sure there is plenty of space to work;
- clear up slip or trip hazards promptly;
- make sure your teacher agrees with your plan and risk assessment.