

Wind Power

The first offshore wind farm was built off the coast of Blyth and opened in December 2000. It consisted of two wind turbines and at the time they were the largest offshore turbines in the world.

Although they were decommissioned in 2019 they paved the way for more offshore turbines in the UK. Blyth is now home to ORE Catapult, the UK's leading innovation and research centre for offshore renewable energy.

As well as this, just offshore from Blyth a demonstrator wind farm can be found. This is a test site for new offshore technologies.

The North East is a key place for a career in the energy sector with Newcastle college recently launching their energy academy which will train the future workforce in the energy sector using qualifications from apprenticeships to degrees.



The two 2MW turbines previously sited off the coast of Blyth. Photo © Michael Batey (cc-by-sa/2.0)

Make a pinwheel windmill

Inside are all the instructions you need to make your own windmill!

You will need:

- Paper
- Pencil
- Ruler
- A pencil, stick or straw to attach your pinwheel to
- A thumbtack, sewing pin or skewer

Recommended age: 7+

Investigate!

There are lots of things you could investigate using this activity as a starting point. Why not try making different sized windmills? Maybe even using some clean recycling to test out different materials?

You could use your pinwheel to test the wind speed in different areas. To measure the different wind speeds draw a mark on one of the blades of the pinwheel and count how many times it does a full turn in a set amount of time, or how long it takes to do one turn if it's not very windy!

The Our Past, Your Future project aims to celebrate our science, technology, engineering and maths heritage and we'd love to hear your stories. You can share them with us by emailing: stem@museumsnorthumberland.org.uk

Top tips for families

Asking questions

Asking questions during the activity is a great way to see learning and develop an understanding of what is happening. Asking open ended questions will encourage discussion, here are some suggestions for starting your questioning:

- What problem do we need to overcome?
- How do you think we could...?
- What would happen if we change/ move/ add/ remove...?
- What happens if we use different materials? Do some work better than others?#
- Why is this more/ less successful than...?

Thinking like scientists and engineers

Keep encouraging your child to revise their design and try again. Engineers need to be resilient and persistent and keep trying when they are designing new things and these are excellent skills for life.

Engineers use a loop of:

assessing the problem - identifying a solution - implementing and testing the solution - evaluating the solution - refining the solution

It's all about experimenting and coming up with the best solution you can. By making a windmill, modifying the design and testing again can you improve the design?

Scientists like to make predictions before they experiment and then test these predictions to see if they are right. *Can you predict what will happen before testing?*

Scientists then repeat their tests lots of times to see if they get the same results. To do this they make sure that their testing is fair and that they are only changing one thing at a time. By getting the same results more than once scientists can be confident in the conclusions of their experiments.

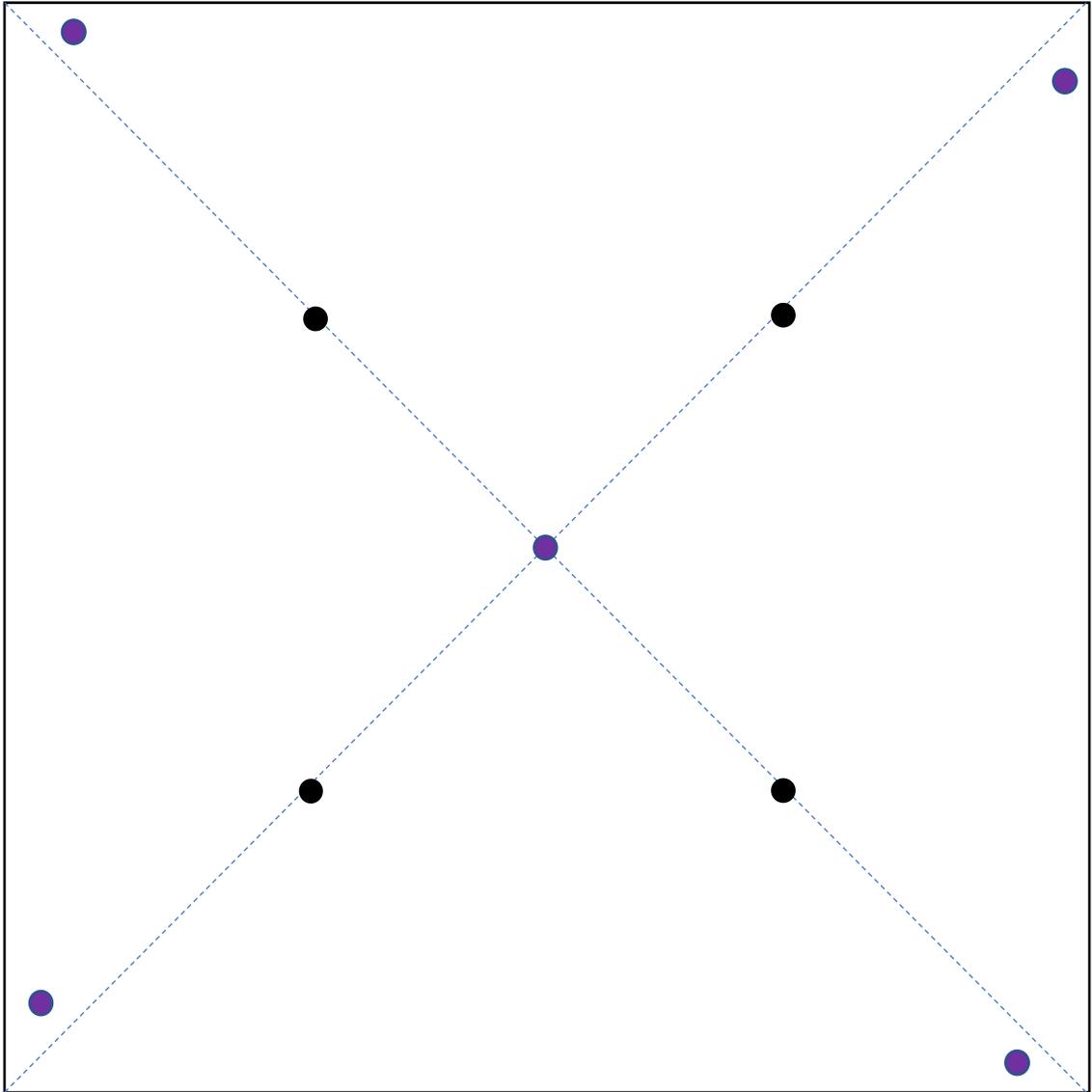
Careers to think about

If you have are interested in this sector this then you might want to consider the following careers:

Mechatronic Engineer Meteorological Technician Wind Turbine Technician

Go to www.nustem.uk/primarycareers or www.nationalcareers.service.gov.uk/ for more information

Making a pinwheel windmill



Here is a pinwheel template to print. Start by cutting out around the square edges.

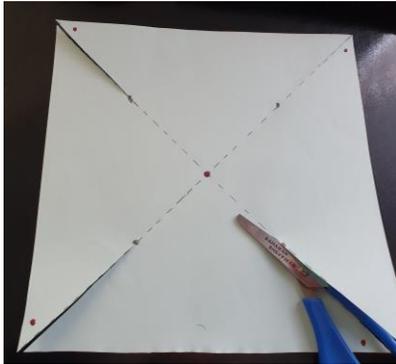
If you aren't able to print out a template then you can easily recreate this by drawing lines from corner to corner on a square of paper. Mark the dots on the diagonal lines slightly more than halfway along from the corner.

The purple dots show where to match the corners to the centre.

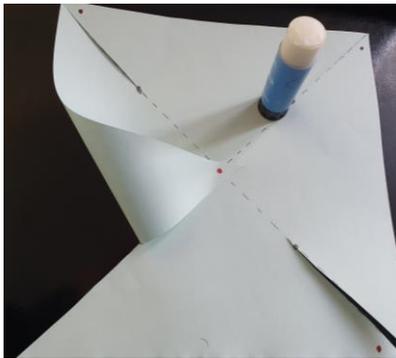
Recommended age: 7+

Note: Please use adult supervision when using sharp objects such as pins and scissors

Making a pinwheel windmill

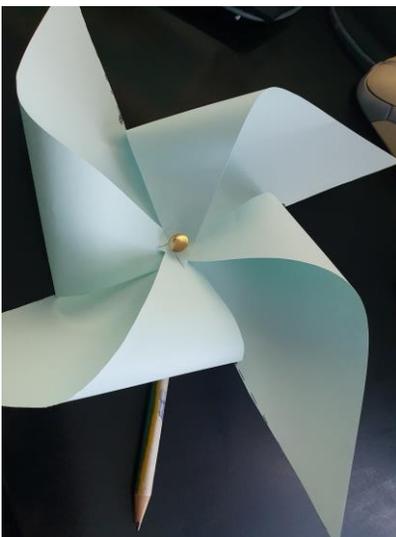


Step 1. Once you have cut out your square, cut along the blue lines until you reach the black dot.



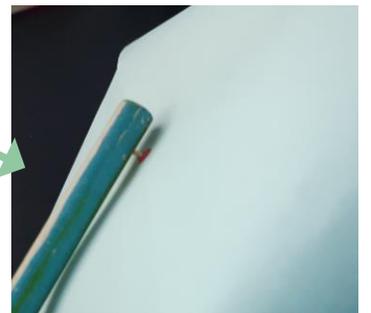
Step 2. Match up the dots from the corners to the centre and secure in place using a glue stick .

This will make your basic pinwheel shape.



Step 3. To allow your pinwheel to spin you will need to carefully poke something through the centre, taking care to capture all the layers.

We have used a drawing pin and attached a pencil at the back.



Step 5: Test your pinwheel to see how well it spins! You could try blowing on it, or take it outside and see what happens.

Note: Please use adult supervision when using sharp objects such as pins and scissors