

Geopark at home

Activity 11 – earthquake engineers

Engineer an earthquake-proof building and test its durability!

You will need:

- Tray
- Building materials
You can use twigs or other things you find lying around your garden.
You could reuse recyclables that are going to be thrown out.
Remember you need something to tie everything together e.g. sting, tape

What to do:

Your aim is to build a tower that can withstand an earthquake. Place the tray on the ground and build your tower on top of it. Get imaginative. Your building needs to be smart and strong.

When you think your tower is earthquake-proof, shake the tray from side to side and see what happens. Will your tower survive?

If your tower falls, make some modifications and try again.



What's going on?

The North Pennines has many ancient fault systems. Faults are formed in the rocks when there is a sudden jolt in the Earth's crust (or surface). This movement can be small (just millimetres), or huge (stretching over kilometres). The Earth's crust is split up into plates, and where these plates meet are the boundaries. Most new faults occur in places that are near plate boundaries. Some of these places get lots of earthquakes like Japan, New Zealand and Chile. All of the plates are moving very slowly; roughly the same rate your fingernails grow. As the plates slide past each other, they get stuck, and the pressure builds up. The pressure builds up and up until it is released with such force that cracks form and the ground shakes! We know that the North Pennines must have had earthquakes in the past, because the resulting faults can still be seen in the landscape.

For the places located near plate boundaries, earthquakes can be part of everyday life. Buildings, roads, railways and all other built structures are made with earthquakes in mind. They use 'quake-resistant technologies'.



Take it further:

- Try building your tower taller. How tall can you make the tower before it falls?
- Try different building materials. What materials work best?
- Different earthquakes have different magnitudes. The magnitude of an earthquake is a measure of how much the ground shakes. Start with a low magnitude earthquake and shake your tray gently. Build up to a big magnitude earthquake and see if your tower survives.

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