out&about

Exploring microclimates

November 2010

Schoolgrounds-UK

School grounds focus:

- Where are we now?
- Where do we want to be?
- How can we get there?
- Making the changes
- Using your grounds

Curriculum focus:

- Geography
- Science
- Design and technology

Purpose of this activity:

- To find out which places in the school grounds experience extremes of weather and why.
- To understand how microclimates are formed.

Equipment and materials:

- thermometers.
- instruments to measure wind speed and direction such as a portable anemometer and weather vane (see over page).
- pencils and clipboards.

Preparation:

Using a map or model of the school discuss which areas of the school grounds might be especially prone to the influence of temperature and wind – look for sheltered and exposed areas. Choose two or three locations that are likely to provide the best data.

What to do:

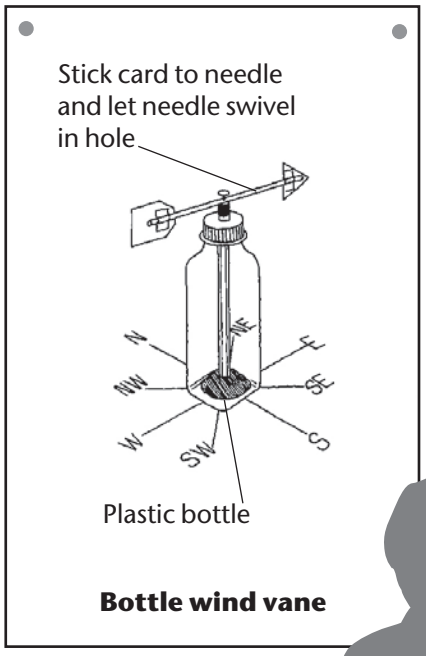
- At regular intervals during the day ask pairs of children to measure and record temperature and wind strength in each location. Take readings at different heights – ie low to the ground and head-height.
- Display the data as graphs or enter on to a spreadsheet.
- Analyse the results of your data. How wide are the variations from place to place? Do they change during the day? How can this be explained? Do the variations affect where children prefer to sit or socialise? Do they affect play or plant growth? Does the surface material have an impact – for example, is the temperature 30cm above tarmac the same as 30cm above grass? Why might this be?

Extensions:

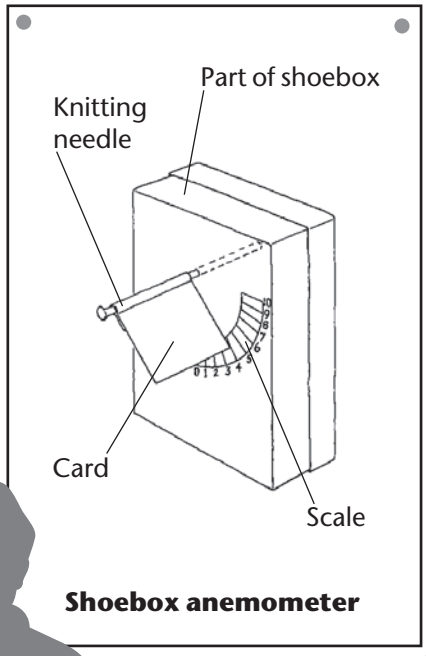
- Look at the results in conjunction with the school building – have features such as porches, skylights, paths, doors (designed to sustain wind gusts) and windows (to allow the most light) been well placed? How could the site be improved to take advantage or minimise the effect of a microclimate? For example, planting, shades, sails, changing surface materials, windbreaks etc.
- Ask the school caretaker to come and talk to the children about how these microclimates affect the school. Which areas get the most dirty when it is wet? Which suffer from leaking roofs, draughty windows etc? Where do all the leaves accumulate?
- Talk about how microclimates outside might affect conditions inside the building. If it is hot just outside a window, is it likely to be hotter inside?
- Using overlays of tracing paper on a plan of your school site, indicate where the prevailing wind is, where shade is etc. See if these findings match up with your experimental results.

Make your own weather vane and anemometer

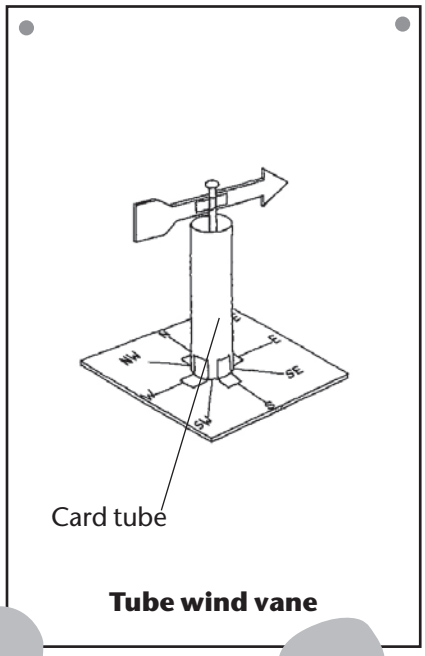
A weather vane is an instrument for showing wind direction. An anemometer is an instrument for measuring wind speed. Here are some diagrams to help you make your own.



Bottle wind vane



Shoebox anemometer



Tube wind vane