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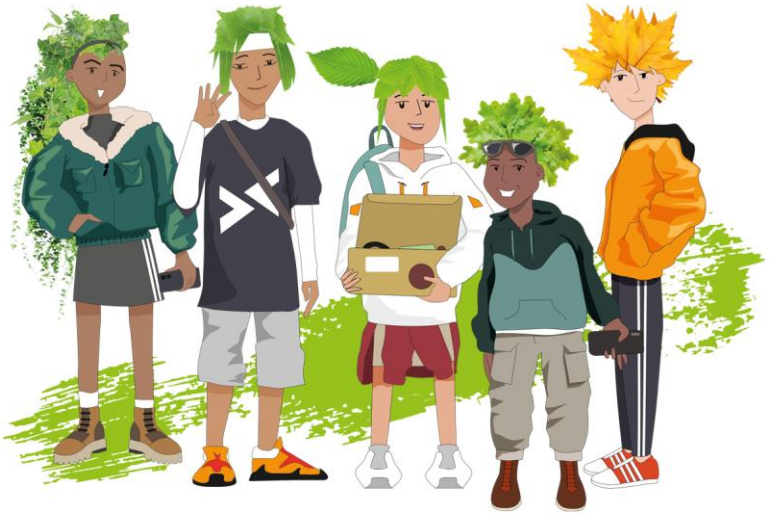

ACTIVITY INSPIRATION GUIDE

LET'S COOL IT

SUBJECT: **SCIENCE**

TOPIC: **CLIMATE**

Many school grounds can get very hot in the summer months and this is only going to get worse as climate change progresses. Luckily, trees can help make school grounds cooler by providing shade and cooling the air around them through transpiration.

This inspiration guide shows you how to assess the impact trees can have in your grounds.

Three steps for measuring temperature

1) Plan a scientific enquiry about where students feel the hottest and coolest temperatures and set up an experiment to test this
2) Consider why you get the results you do: look at things like that area's proximity to buildings and plants, its materials, and the position of the sun
3) Finally think about planting some more trees or other plants in areas that are hottest

Weblinks

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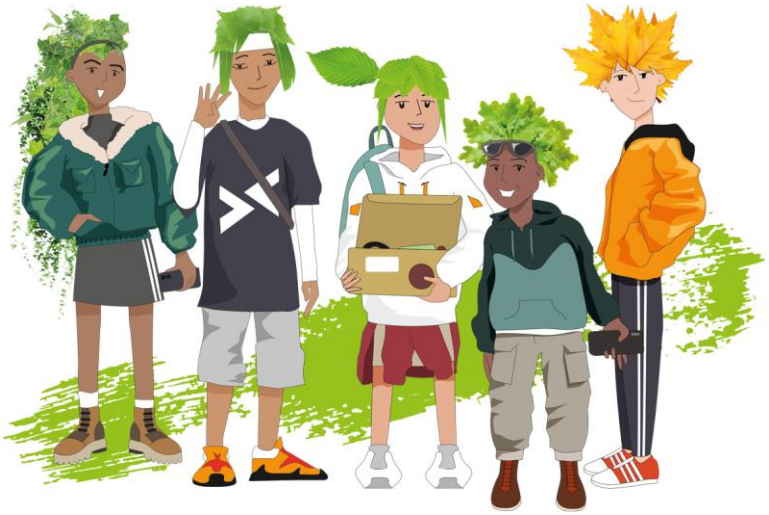
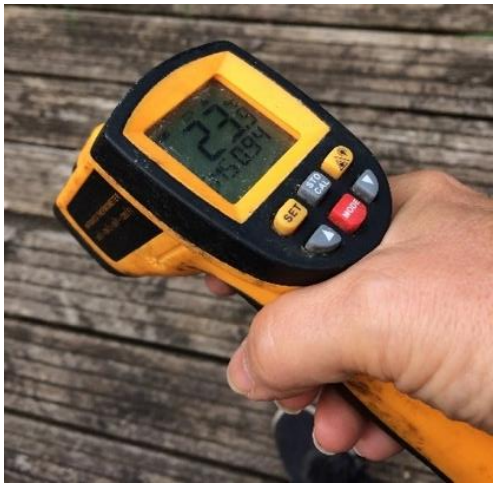


There are different ways to measure the outside temperature. Students can measure the ground temperature and they can also measure the air temperature. The most useful information can be gained by linking the two to see what impact the ground surface has on the surrounding air, and therefore how hot it feels.



Ground temperature

To measure the ground temperature, it is useful to have a temperature gun – it's the type of thermometer you may have seen used at airports or when you go into indoor venues at the moment.

Some of the following may be useful parts of your experiment:

- Go outside and, without taking the temperature, get students to decide what they think are the warmest and coolest places.
- Use your temperature gun to take the following readings:
  - The temperature of different types of surface in the sun, for example, asphalt, safety surfacing, grass, bare ground
  - The temperature of different types of surface in the shade – same surfaces
  - The temperature under trees – so in the shade but also under the trees
  - The temperature of the playground – in the middle and at the edges
  - The temperature of the ground just outside the classroom

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the tree council
YOUNG TREE CHAMPIONS in partnership with M&G

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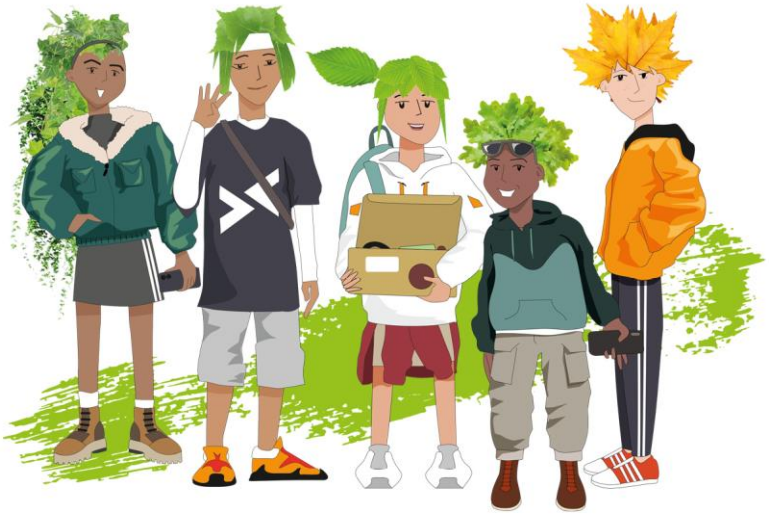

Air temperature

To measure the temperature of the air, tie an ordinary thermometer to the top of a metre stick – this will mean you get the temperature at a consistent height wherever you take it.

Use this thermometer to take the following readings:

- The temperature out in the sun – above the different surfaces you are measuring the ground temperature
- The temperature in the shade – again above the different surfaces
- The temperature under the trees
- The temperature in the playgrounds – at the same points
- The temperature outside the classroom but also
- The temperature INSIDE the classroom – near to the windows and in the middle of the room. Note which way the room faces, which can be calculated by the times when the sun shines into the room. Try this in several classrooms to see the impact of the temperature outside on the inside temperatures.

Testing hypotheses

When you have gathered the data, you can use it to support, or reject, your hypothesis. Plot the air and ground temperatures on the same graphs so that you can see how they relate to each other and compare these with where you felt the warmest and coolest places were. Consider the following questions:

- Did you expect the temperature to be the same everywhere?
- Where did it feel the hottest and coldest and how does this compare to the actual measurements?

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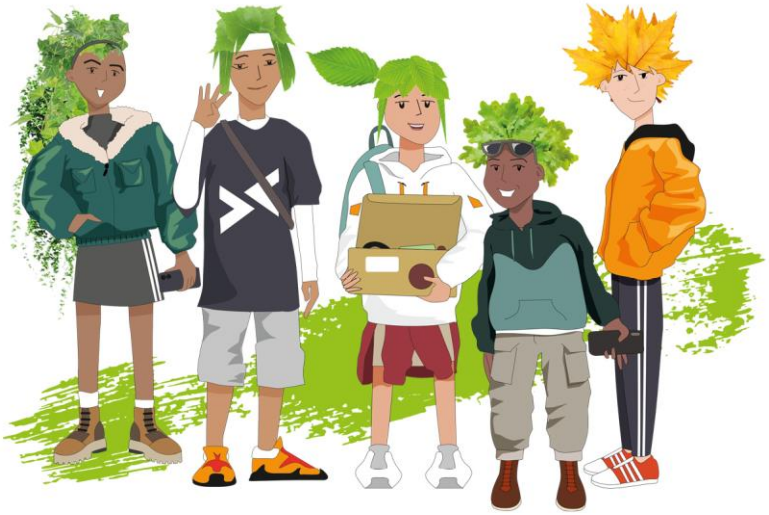

- Were you surprised by any temperatures you measured?
- What other factors might have made it feel different from the actual temperature in different places?
- What affected the differences in temperature and why?
- How could the trees have had an impact on the temperature?
- How were the temperatures in the classroom affected by the temperatures just outside?
- What could you do in your school grounds to help keep temperatures, both outside and inside, lower?
- Where might be the best place to plant new trees in your grounds?

Science curriculum links

- Planning different types of scientific enquiry
- Take measurements using a range of scientific equipment
- Record data using tables, graphs and bar charts
- Reporting conclusions and explaining results
- Identifying scientific evidence
- Carrying out practical investigations showing how plants have benefits to society

Top Tips

- Repeat this experiment on different days so that you get a range of data collected and can see the difference between a sunny day in winter and a cloudy day in summer, for example.
- Consider the general weather conditions on how it feels outside – so how much might the wind have an impact, for example.
- Use maps of the school grounds so that it is easy to link where the readings have been taken to the data gathered.
- Check out the forecast for that day – how do these relate to the temperatures you recorded outside?

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