



EduTrend Contents

W4C · GEOGRAPHY & ENVIRONMENTAL STUDIES · MIDDLE SCHOOL

Microclimate Detectives

Measure how the school site changes the weather

Ages 12–14

Level: Intermediate

60 minutes

Groups of 3 · up to 30

Activity 04

Inside: activity at a glance · step-by-step session plan · facilitator notes · 3 student worksheets · assessment checklist

ACTIVITY 04 · AT A GLANCE

Microclimate Detectives

Teams measure air and ground temperature, wind speed and direction, and cloud or shade cover at six sites around the school at the same time. They map the data, identify warm, cold and windy spots and explain the patterns using surfaces, buildings and vegetation.

Learning outcomes

By the end of the session students can:

- collect weather data accurately at several sites;
- present data on a map using symbols or proportional bars;
- explain how surfaces, buildings and vegetation create microclimates;
- suggest where to site a seating area or garden using evidence.

KEY WORDS

microclimate · temperature · wind speed · wind direction · surface · shelter · urban heat · data

CURRICULUM LINKS

Geography: weather, climate and fieldwork. Science: measurement and data. Maths: averages and mapping data. Geography for Life (2012), standard 7.

1**ASK**

What is the question?

2**LOCATE**

Find it on a map

3**OBSERVE**

Look in the field

4**MEASURE**

Collect data

5**ANALYSE**

Spot patterns

6**EXPLAIN**

Why here?

Materials (per team)

- Thermometer or temperature probe
- Anemometer (or a paper streamer and Beaufort scale card)
- Compass for wind direction
- Site map with six numbered sites
- Clipboard and timer
- Worksheets 1, 2 and 3

Before the session

- Choose six contrasting sites: tarmac, grass, shade of a building, open field, near a wall, among trees.
- Check all instruments read similarly by placing them together first.
- Plan the timing so all teams read at the same moment.
- Check the weather forecast; a sunny day gives clearer contrasts.

SAFETY

Stay within agreed sites and away from roads and car parks. Sun protection on hot days. Two adults outside.

ACTIVITY 04 • SESSION PLAN

Step by step

Readings taken at the same time are essential; explain why before teams go out.

Time	What happens	Say or ask
0–10 min Hook	Ask: where would you sit on a hot day, and on a windy day?	<i>“Why is it warmer in some places?”</i>
10–15 min Method	Demonstrate each instrument and the recording sheet.	<i>“Why must we measure at the same height and time?”</i>
15–35 min Fieldwork	Teams measure at all six sites, rotating on a signal.	<i>“What surface are you standing on?”</i>
35–50 min Map	Combine class data on a large site map.	<i>“Where is warmest? Windiest? Why?”</i>
50–60 min Apply	Teams recommend the best site for a new seating area using evidence.	<i>“What trade-offs are there?”</i>

CHALLENGE CARD (print or copy onto the board)

Use class microclimate data to recommend the best site for a new outdoor seating area and justify your choice with evidence.

ACTIVITY 04 · FACILITATOR NOTES

The geography in brief

A microclimate is the climate of a small area that differs from its surroundings. Dark, hard surfaces such as tarmac absorb heat and warm the air; grass and trees stay cooler through shade and evaporation. Buildings create sheltered spots and also funnel wind between them.

On a larger scale, the same processes make towns and cities warmer than the countryside, an effect called the urban heat island. Planners use trees, green roofs and light-coloured surfaces to reduce it. Instruments must be read carefully and at the same time for results to be comparable.

Common ideas to listen for

- “Temperature is the same everywhere at school.”
Surfaces and shelter create real differences.
- “Wind always comes from the same direction.”
Buildings can change local wind direction.
- “Shade and cool are the same thing.” Shade helps, but surfaces and wind also matter.

Adapting the activity

Support

Use three sites and pre-drawn symbols for recording.

Stretch

Repeat readings at a different time of day and explain changes in the pattern.

WORKSHEET 1

Field record

Name: _____

Class: _____ Date: _____

Record readings at each site.

Readings

Site	Surface	Air temp (°C)	Ground temp (°C)	Wind speed	Wind direction
1					
2					
3					
4					
5					
6					

WORKSHEET 2

Mapping the data

Show your data on the site map.

Map

Use proportional bars for temperature and arrows for wind.

Patterns

WORKSHEET 3

Recommendation

Where should the seating area go?

Our choice

Evidence

Trade-offs and limitations

FOR THE TEACHER

Assessment checklist

Use during the session. One sheet covers up to eight students; copy as needed.

Student	Collects accurate data	Maps and explains patterns	Justifies a recommendation

Suggested codes: W = working towards · E = expected · G = greater depth

ABOUT THIS ACTIVITY

Microclimate Detectives is a sample activity from the EduTrend Contents W4C Geography & Environmental Studies programme (middle school, level: intermediate). Every activity in the programme follows the same format: a practical challenge, a clear session plan, facilitator notes and ready-to-print worksheets, so that teachers, club leaders and parents can run it without extra preparation.

Full 15-, 20- and 32-week programmes are available from EduStore at edutrend.org.

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