Lesson Five:	How hot is hot?
Aim:	To compare microclimates in Oman with those in the UK by practicing the skills of drawing climate graphs
NC Links: **Scottish NC Es and Os:**	Deepen understanding about the world and the interaction between physical and human processes; Understand climate zones SOC 3-10a, MNU 4-20a
Key Vocabulary:	microclimate, temperature, desert, temperate, location, aspect, shade, shelter, latitude, wind speed

Resources:	**Learning Outcomes:**
PowerPoint: How hot is hot Microclimate data Duchess's Community High School Microclimate data British School Muscat Microclimate data Outward Bound Oman Desert Centre	• To understand the impact high temperatures have on a way of life • To describe and compare desert and temperate climates • To compare temperatures in Oman and the UK • To respond to geographical questions and make decisions • To produce line graphs • To compare microclimate data using graphs • To describe data

Lesson Introduction:

In this lesson students will consider the relationship between temperature and climatic zone in Oman and the UK and use this to answer the title question. They will understand the term microclimate and will compare the microclimates of locations within Oman and the UK.
Students will use atlases and Google Earth to describe the location of Muscat, Outward Bound Oman's Desert Centre and the Duchess Community High School in Northumberland, UK. Following the lesson, they will be encouraged to collect their own data and use this to add to the comparison.

Starter: (10 mins)

Slide 2-5: What temperature does…
Ask students to think about the question and explain and justify their answers. Students should keep a record of their initial thoughts to refer to at the end of the lesson.
Ask students to consider what observable outcomes there are when the temperature is considered too hot. Students should look at the newspaper headlines on the slide and think about the temperatures being recorded and the impact they have.

Slide 6: What do you know about…
Ask students to comment on what they already know about the climate of each of the countries featured. Discuss how a heatwave is relative to a location. Students can also comment on what they have learnt about the location of the UK and Oman.

Main Activities (40 mins)

Students are going to examine microclimate data (temperature and wind speed) collected from the British School Muscat and Duchess Community High School. Equally teachers may wish to collect data from their own school site for comparative purposes.
Students should know that Oman has a desert climate where it is hot and dry, and that the UK has a temperate climate where the temperature range is lower and it rains more often. The north east of England, where DCHS is located is drier than other parts of the UK as it is on the east coast and in the rain shadow of the Pennine mountains.

Discuss with students the meaning of the term 'microclimate'. Give students *Microclimate data Duchess's Community High School* and *Microclimate data British School Muscat*. The map on each sheet shows the locations where the data was collected. Working in pairs, students should discuss the aspect and shelter of each of the locations, as well as for how much of the day they are likely to be in the shade. Students then need to discuss with each other how they are going to present the data so that they are comparing the microclimates of each school. Teachers can promote thinking in students, for example by getting them to recognise the inconsistencies between the data sets, not least the units used to measure wind speed. Students may wish to manipulate the data accordingly and they should be encouraged to remember that genuine comparison only comes through comparing like with like. The data presents a variety of problem solving opportunities in this way and with encouragement students will recognise the need to compare sites with similar microlocations across the two schools.

Reflection: (10 mins)

Using evidence from their graphs, students should draw conclusions about the range of temperatures in the sites compared. Students should then look back at their initial ideas about what 'hot' means from the starter activity and reflect on how their opinions have changed or been strengthened.
Students can think about which school they would prefer to be at in terms of temperature and use data to help explain their ideas.

Additional Lines of Enquiry:

- Consider how reliable the data is and how it could be improved
- Explaining the reasons between the different sets of data
- Use *Microclimate data Outward Bound Oman Desert Centre* as an additional comparison

Bibliography:

Climate data is taken from students and weather stations at each of the schools and the Outward Bound Oman Desert Centre:
DCHS (Nov 2017)
BSM (Jan 2018)
OBODC (Jan 2018)

Imagery: Slide 2 to 5 - Newsgroup newspapers; The Telegraph online (17.06.18); The Guardian online (17.06.18), Muscat Daily (04.06.18); Gulf News (17.06.18)
Imagery: Slide 6 – Google Earth; www.outline-world-map.com
Duchess's Community High School map from DCHS Art Department
British School Muscat overhead from Google Earth
Outward Bound Oman Desert Centre Plan from Outward Bound Oman