Unit 4.6: We are meteorologists

Presenting the weather

Software: Google Sheets and Slides (alternatives: Microsoft Excel and PowerPoint)

Hardware: Laptop/desktop/Chromebook computers or tablets, Smart home weather station or other equipment for measuring for weather

Overview

This unit brings together **data** measurement, analysis and presentation, as pupils take on the role of meteorologists and weather presenters. In:

- **Session 1** they discuss ways to measure the weather and explore equipment
- **Session 2** they record the weather over a period of time using a range of methods
- **Session 3** they analyse the weather data collected
- **Session 4** they analyse the photographs taken and link them to data
- **Session 5** they predict the weather and plan a weather forecast
- **Session 6** they deliver their TV-style weather forecast and reflect on learning.

Alternatives

Microsoft Excel and Microsoft PowerPoint can be used instead of Google Sheets and Google Slides for collecting, analysing and presenting data.

Knowledge, skills and concepts

In this unit, pupils will learn to:

- understand different measurement techniques for weather – both **analogue** and **digital**
- use computer-based **data** logging to automate the recording of some weather data
- use spreadsheets to create charts
- analyse data, explore inconsistencies in data and make predictions
- practise using presentation and video software.

Progression

In Key Stage 1:

- Pupils work with **datasets** in **Unit 1.6: We are detectives**.
- Pupils use browsers, data **input** and presentation software in **Unit 2.4: We are safe researchers**.

In Key Stage 2:

- Pupils work with structured data in **Unit 3.6: We are opinion pollsters**.
- Pupils explore algorithms for working with structured data in **Unit 6.2: We are computational thinkers**.

Assessment – by the end of the unit:

All pupils can:

- use weather measurement equipment safely
- enter **data**
- take **digital** photos
- create simple charts
- make predictions
- create a presentation for their weather forecast.

Most pupils can:

- use weather measurement equipment accurately
- describe the weather
- make sensible predictions
- add measurements and descriptions to photographs
- present the weather effectively to their peers.

Some pupils can:

- identify unusual data
- make accurate predictions
- consider some of the difficulties in predicting the weather.

Background information

- Computers are used to collect, store and process large amounts of structured **data**. A common data structure is the **table**, where each row represents a single entity, and each column records values for the attributes of that entity. For example, **records** of temperature, rainfall, pressure, wind speed and direction at a location over a number of days can be organised in this way.
- Organising data like this makes it easy to select particular records and to sort results according to the data recorded. It also makes it possible to identify patterns and exceptions, to explore relationships in the data and even to make predictions for future values.

Key vocabulary

Analogue: continuously changing values, such as temperature or pressure

Data: structured information gathered for analysis, often, but not always, as numbers

Dataset: a set of data from a group related to a particular topic

Digital: storing, processing or transmitting information as numbers, such as temperature to the nearest degree or pressure to the nearest kPa

Field: information in a database related to a single type of information given for all the records, such as age

Filter (database): to identify a subset of data based on one or more criteria

Form: a way of entering a record and sometimes viewing a database record

Input: data supplied to a computer

Interface: the link between one system and another, typically between the user of a program and the computer on which it runs

Record: information in a database related to one individual or case

Sensor: means of getting data from the real world into a computer

Table: a data structure representing records as rows and fields as columns

Differentiation

See each session (pages 63–68) for ways to increase support and add challenge to this unit. The range of weather measuring tools provided should include equipment that could be operated by members of the class with any identified SEN. Some pupils with SEN may find **data-logging** equipment significantly easier to work with than traditional **analogue** devices. Internet-based weather resources are available in a range of languages for EAL pupils. Pupils can be offered additional challenge by comparing weather at the school with other locations, or exploring long-term trends in weather data. Some pupils might explore how the Met Office produces weather forecasts.

Cross-curricular opportunities

English: Pupils can develop their mastery of spoken language; in particular, giving well-structured descriptions, speaking audibly and fluently, participating in presentations and selecting and using appropriate registers for communication.

Geography: Pupils can consolidate their knowledge of the geographical regions of the UK and the eight points of the compass.

Maths: Pupils practise interpreting and presenting discrete and continuous **data** using appropriate graphical methods, including bar charts.

Science: This unit covers almost all the statutory requirements for 'Working scientifically' in the programme of study for Lower Key Stage 2.

Preparation for teaching the unit

Things to do

- Decide which software/tools are most accessible and appropriate for use with your class.
- Download your chosen software/tools (see *Useful links*) and spend some time familiarising yourself with them.
- Read pages 60–61 to get an overview of the unit.
- Read the steps in the unit sessions (pages 63–68) and look at the associated online resources, printing out worksheets as required.
- Watch the video walkthroughs for this unit (see *Online resources*).
- Watch the CPD videos (see *Additional resources*).
- Work through the unit yourself so you know what is expected of pupils.
- Ensure you have sufficient computers/laptops/tablets and other equipment booked in advance.
- Ensure pupils have access to Google Sheets if you plan to use it for data analysis.
- Consider recording some TV weather forecasts to show the class.

Resources needed

- **Software:** Google Sheets and Slides (see *Alternatives* page 60)
- **Hardware:** Laptop/desktop/Chromebook computers or tablets, Smart home weather station or other equipment for measuring for weather

Online resources provided

Session resources

- Worksheet 4.6a: Weather chart template
- Worksheet 4.6b: End-of-unit quiz
- Worksheet 4.6c: Pupil self-assessment
- Weather prediction planning sheet
- Teaching slides 4.6a–4.6f
- Walkthrough videos 4.6a–4.6b
- Interactive end-of-unit quiz 4.6
- Weather data collection template and example

Additional resources

- CPD video: Analysing time series data
- CPD video: How we forecast the weather

Online safety

- Check school policy and seek parental/carer permission before videoing pupils' weather presentations, particularly if they are to be posted on the school website or an external website.
- If you decide to submit your school's weather measurements to Weather Underground, there should be no need to share pupils' details.
- If you decide to use Google Sheets (part of the free G Suite for Education package), pupils will need Google accounts.

Collaboration

Pupils have plenty of opportunity to work together in this unit. They make observations of the weather in their locality and analyse findings. They consider their results and how they might be presented. They also work together to create presentations, which they then evaluate and improve.

Useful links

Software and tools

- Google Sheets: **www.google.co.uk/sheets/about**
- Google Slides: **www.google.co.uk/slides/about**

Online tutorials

- Get started with Excel: **www.support.office.com/en-gb/excel**
- Overview of Google Sheets: **support.google.com/a/users/answer/9310369?hl=en**

Information and ideas

- The education portal of the Royal Meteorological Society: **www.metlink.org**
- Advice from the Royal Meteorological Society on using automatic weather stations: **www.metlink.org/observations-and-data/weather-stations**
- The LGfL/NEN weather monitoring system: **weather.lgfl.org.uk**
- Weather Underground: **www.wunderground.com**
- Past weather data from the Met Office: **www.metoffice.gov.uk/climate/uk/summaries**
- Suppliers of weather station equipment: **www.weatherstations.co.uk** **www.weather-station-products.co.uk**
- Information on setting up a weather station: **www.weatherforschools.me.uk**
- BBC Radio 4 shipping forecast: **www.bbc.co.uk/programmes/b006qfvv**