

## technology

# Working with data: tables, charts and what they tell us

## Lesson at a glance

Open with the same small set of class numbers shown two ways: a jumbled list beside a blank two-column table outline, and ask which version they would trust. Model I wonder → I organise → I chart → I think on today's shared dataset (micro:bit place readings or the outdoor-play survey bands). Groups draft a neat table on squared paper under locked categories, then the class builds one agreed table and bar chart on the data-recorder interactive. Pupils copy the class table into the Investigation Journal and separate what the bars show from what they think it means before short group shares.

## Learning objectives

- Select and organise a gathered dataset into a clear table
- Present the data as a chart and describe what it shows
- Explain why data must be organised and presented clearly before it can answer a question in science or digital life

## Before the bell – prep

Have today's raw class dataset ready before the bell as a visible list (micro:bit light/temperature logs from earlier in the unit, or run the two-minute outdoor-play band tally as start-of-lesson prep). Pre-write two of the three model averages if using place readings. Squared paper for draft tables; data-recorder interactive ready on the IWB.

## Materials

| Item                                                                           | Qty | Per   | Source             | Low-cost substitute                                                  |
|--------------------------------------------------------------------------------|-----|-------|--------------------|----------------------------------------------------------------------|
| class dataset (micro:bit readings or survey tallies from earlier in this unit) | 1   | class | classroom          | a quick board tally from a class survey run before the lesson starts |
| squared or graph paper                                                         | 1   | pupil | classroom          | plain paper with a hand-drawn grid                                   |
| ruler                                                                          | 1   | pupil | classroom          | fold paper edges as a straight edge                                  |
| pencil                                                                         | 1   | pupil | classroom          | any writing tool                                                     |
| Investigation Journal page                                                     | 1   | pupil | provided printable | plain paper labelled Table and What the chart shows                  |

**Safety watch-point**

Normal classroom device care only if tablets are used to view saved micro:bit data. No other hazards in this lesson.

**Teaching moves**

- **Why organise data?:** Keep the board tight: narrate one average fully aloud, then reveal the other two category values already pre-written so the three-row table and sketch chart still fit in about eight minutes. Hang table and chart as the load-bearing pair; fold dataset and pattern into the model language. Lock today's shared categories on the board before groups start.
- **Select and organise our dataset:** Before groups work, name the shared dataset, the shared question, and the category labels aloud; write one filled header pair (e.g. Place | Average light reading or Play band | Number of pupils). Default method is average for repeated readings; counts stay as tallies. Draft tables stay on squared paper only. Predictions come only after the draft is filled and target the biggest bar gap or one claim a chart still will not prove.
- **Build the class chart:** Drive the data-recorder on the IWB. First set the unit in the interactive units field (or write it on the board) before any numbers are dictated. Nominate one agreed source for the class table; type categories and values as pupils call them. After Show chart, ask which bar is tallest, what it stands for, and what the chart does not tell us — keep observation separate from inference.
- **Record the table and what it shows:** Keep the finished class table and bar chart, unit included, visible on the IWB. Pupils copy into the Investigation Journal only: organised categories and values, what the chart shows, and one sentence on why organising mattered. Voice the stems aloud: The chart shows... / The tallest bar means... / I think this means... because... / Without a table, it would have been hard to...
- **Tell the class what the chart shows:** Keep the same shared chart on the IWB. Take two or three groups fully on the brief: shared question, what the bars show, why it matters. Remaining groups offer one evidence sentence only. After two full turns, invite peer comments with One thing that was clear... and One question I still have...

**What it should show**

For place/light readings, the window bar should be clearly tallest and the cupboard shortest once averages are correct (e.g. window ~183, desk ~92, cupboard ~20). For a play-band survey, the tallest bar matches the band with the most tallies. A surprising order usually means a wrong average, mixed categories, or a missed tally — re-check the raw list rather than redrawing the chart. Success is a clear shared table plus pupils separating what the bars show from what they think it means.



## Misconceptions & interventions

- **A neat or colourful chart must be true, even if the categories or averages underneath are wrong.** — Point back at the raw list and one mis-sorted value: if the table is wrong, the tallest bar misleads. Revoice that organising carefully comes before drawing.
- **Pupils guess which category is highest from the jumbled list and treat that guess as the finding.** — Cover the sketch chart and ask them to prove the claim from the jumble alone. Then uncover the organised bars so the pattern is earned, not guessed.
- **Pupils jump straight to why (inference) without first saying what the bars show (observation).** — Hold two stems on the board: The chart shows... versus I think this means... Require one of each before any group presents.

## Differentiation

| Emerging                                                                                                                                                                                                                                                                                             | Developing                                                                                                                                                                                                                                                  | Proficient                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Give category labels and the model header already on scrap paper so the group only places values and checks every reading has one home.</li> <li>• Pair at the teacher table to narrate one average together before they finish the draft table.</li> </ul> | <ul style="list-style-type: none"> <li>• After the draft table, ask which gap between categories will look biggest as bars and why, still using only the shared categories.</li> <li>• Prompt one claim the finished chart still will not prove.</li> </ul> | <ul style="list-style-type: none"> <li>• Ask whether a second grouping of the same raw data would change the story — keep as talk only, not a rival class chart.</li> <li>• Stretch speakers to name one next measurement they would collect to test their inference.</li> </ul> |

## Cross-curricular hook

Tie to the Maths Data strand — pupils organise values, build a bar chart and read tallest, shortest and the size of the gaps.