Lesson 27

technology

micro:bit: logging data over time

Lesson at a glance

Open by showing one live micro:bit temperature or light reading on the IWB and ask what that snapshot cannot tell about the next twenty minutes. After naming data logging, the class chooses sensor and placements; pairs predict climb, fall, flat or jumpy. Pairs build a timed logger in MakeCode (default button-A call-out or array extension), place devices, and gather six readings over about six minutes on a shared clock. One agreed series goes into the data-recorder interactive as a line chart; pairs record times and values in the Investigation Journal and name the trend.

Learning objectives

- Program a micro:bit to log repeated readings over a period of time
- Read a logged dataset for a trend: what rose, fell or changed and when
- Explain why logging over time shows more than a single reading

Before the bell — prep

Charge micro:bits and pair each with a laptop or tablet; have battery packs ready so devices can sit off USB. Open MakeCode on the IWB and set a large visible timer. No-kit fallback: run the simulator on the IWB with pairs taking turns.

Materials

Item	Qty	Per	Source	Low-cost substitute
micro:bit (with USB lead)	1	pair	school devices	run the lesson on the IWB using the MakeCode simulator

Safety watch-point

Normal device care: keep micro:bits away from sinks and drinks; do not leave devices in corridors or outdoors without adult agreement.

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Teaching moves

- **Why log over time?:** Lead with who needs many readings, then name data logging. Model the worked example aloud (wonder → predict → six sample readings → gentle rise). Keep trend as plain language until the line chart; head off the idea that the first or last number is the answer.
- **Predict the trend:** Agree one shared sensor (light often shows clearer change) and two or three indoor placements. Think-pair-share predictions; capture three or four on the IWB in plain words such as climb by the window or flat in the cupboard.
- **Program the logger and let it run:** Reveal the board one phase at a time. Model only the default path first: on button A, show temperature or light; pairs build and download beside you. Place devices, wait for every pair, then start together: Reading 1 now at 0 minutes on one shared clock. During the 6–7 minute window, revisit predictions and sketch possible line shapes — nobody stares at every value. Stop on the shared clock and finalise ordered lists.
- **Table the logged readings:** Set the data-recorder column units to match the chosen sensor (°C or light 0–255). Enter one agreed placement series in time order, then show the line chart and name trend on the board. Pupils record their own timed set and a short pattern note in the Investigation Journal.
- **What does the trend show?:** Keep the chart on the IWB for talk. Revoice toward the readings show... Separate observation from inference and press why the full log beats the single opening snapshot. Name a wrong prediction as useful data, not a failed investigation.

What it should show

Expect slow drift for classroom temperature, or clearer jumps in light if clouds pass or lights switch. A successful set is at least five or six timed values in order that pupils can describe as climb, fall, flat or jumpy. Odd temperature spikes often mean the chip was still warm from USB coding — give a minute on battery before trusting early values. Unexpected flat data is still data about the placement.

Misconceptions & interventions

- **Pupils treat the first or last reading as the answer instead of the pattern across the set.** — Point at the full ordered list or line chart and ask what rose, fell or stayed flat between the ends — the trend is the whole story, not one number.
- **Pupils think logging means watching the screen the whole time.** — Name the method aloud: timed call-outs or stored playback mean humans look away between signals; the device (or shared clock) holds the sequence.
- **If the prediction was wrong, pupils say the investigation failed.** — Keep the chart up and say unexpected results are still useful data — ask what the flat or jumpy line actually tells us about that spot.

Differentiation

Emerging	Developing	Proficient
• Stay on the default timed button-A call-out path; partner records times while the other presses on the teacher's signal. • Predictions limited to climb, fall or flat.	• Add roughly when they think a change will show, then check that moment on the line chart. • Compare their journal series with the class windowsill line in talk only.	• After a clean default run, try the array-logger extension or compare two placements on paper. • Sketch the expected line shape on scrap paper before seeing the numbers, then critique how fair the shared start and interval were.

Cross-curricular hook

Tie to Maths Data — ordered tables and line charts — and Met Éireann's repeated weather readings over time.