

LESSON 27

Logging data over time with a micro:bit

40 minutes

Strand 2: Let's get connected

Built in micro:bit

Outcome 1.7

Outcome 1.8

WHAT THIS LESSON DOES

Students build a four-micro:bit Seismic and Meteorological Station that senses temperature, light and shake activity and shares the readings by radio. They test the full system and interpret patterns in the live sensor data.

CURRICULUM OUTCOMES

Outcome	What the specification asks for
1.7	discuss and implement core features of structured programming languages, including variables, operators, loops, decisions, assignment and modules
1.8	test the code to determine its functionality and to identify and manage errors

WHAT STUDENTS SHOULD BE ABLE TO DO

- Program the micro:bit data logger to record sensor readings over time and download them (LO 1.7)
- Test the logger and read a pattern off the logged dataset, saying what it shows (LO 1.8)

BEFORE THE BELL

- Have students logged in to the platform with the micro:bit MakeCode editor ready to open.
- If using physical boards, set out four micro:bits per group (or share across pairs), USB cables, and battery packs; otherwise plan to use the simulator.
- Students open the project they saved earlier so this part continues from the same build.
- Check that radio use is allowed in the room and that boards can be flashed one at a time without cable mix-ups.

WHAT YOU NEED

Item	Qty	Per	If you do not have it
micro:bit (with USB lead)	1	pair	run the lesson on the IWB using the MakeCode simulator

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HOW THE LESSON RUNS

4 min	introduction	Start: what we're building
3 min	content	The plan: four micro:bits, one station
4 min	content	Coding the Seismic Station Microbit
4 min	content	Coding the Temperature Display Microbit
4 min	content	Coding the Day/Night Indicator Microbit
4 min	content	Coding the Seismic Alert Microbit
5 min	content	Log the readings over time, then download them
4 min	content	Testing the Project
2 min	content	Improve the project
3 min	content	Make sense: what worked, what broke
2 min	content	Reflect
1 min	summary	What you covered

TEACHING MOVES

- Model the first receiver on the board so students see the radio group and the on received value pattern before they create the other two projects.
- Keep project names clear (station, temperature, day/night, seismic alert) so the correct hex goes on the correct board at test time.
- During testing, have one student shake or cover the station board while others watch the three displays; that makes the data flow visible.
- Treat debugging as a named skill: when a display stays blank, ask which name string and which radio group they used before changing anything else.

WHAT TO WATCH FOR

- Radio group not matching on every board: set group 1 on all four projects and re-download.
- Wrong program on the wrong micro:bit: flash one board at a time and check the project name before each download.
- Seismic alert never clears: students forget the else branch that clears the screen and stops sound when the value is not 1; add it and retest with a fresh shake.

DIFFERENTIATION

- Support: Provide a checklist of the four project names and the sensor each one handles; let pairs complete station plus one receiver first, then add the others.
- Extension: Challenge students to show movement intensity on the alert board or to add a simple sound-level idea from the improve step.
- Extension: Ask stronger pairs to log when readings looked highest or lowest during the test and explain the pattern to the class.