

Studio: Step Counter

40 minutes

Project studios (optional extension sessions)

Built in micro:bit

Outcome 1.7

Outcome 1.8

WHAT THIS LESSON DOES

Students build a wearable micro:bit step counter, test it while walking, adjust the count for one-sided shake detection, and explain where the reading goes wrong.

CURRICULUM OUTCOMES

Outcome	What the specification asks for
1.7	Discuss and implement core features of a structured programming language: variables, operators, loops, decisions, assignment and modules.
1.8	Test code to find and manage errors.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Build a wearable step counter that counts over time (LO 1.7)
- Check its accuracy and explain the errors (LO 1.8)

BEFORE THE BELL

- Students logged in to the Coding Ireland platform and ready to open MakeCode for micro:bit (makecode.microbit.org).
- micro:bit boards, USB cables, and small power banks (about €4) available; check batteries if needed.
- A spare micro:bit and cable for demo; space cleared so students can walk safely once code is on the board.

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
2 min	content	Create a new Microbit project
2 min	content	Create the 'steps' variable
2 min	content	Setup the 'steps' variable
4 min	content	Detect a step
4 min	content	Display the number of steps
2 min	content	Send the code to your Microbit
3 min	content	Connect a power source
5 min	content	Get walking!
4 min	content	Every second step
2 min	content	Resend the code to your Microbit
3 min	content	Make sense: what worked, what broke
2 min	content	Reflect
1 min	summary	What you covered

TEACHING MOVES

- Model creating the project and the steps variable on the board before pairs continue; keep early steps tight so time goes on testing.
- Hold the walk test until power is connected and the display loop is on the board; do not send the class walking before the fix step is ready to follow.
- When they notice every second step is missed, pause and ask why before revealing the change from 1 to 2.
- Stress careful placement in a pocket or sock so boards are not dropped or stepped on.

WHAT TO WATCH FOR

- steps never set to 0 at start, so the display shows a stale or blank value: reset the variable on start and resend.
- Shake handler added but number never shown: check the forever display is on the board and the download finished.
- Count still odd after the fix because the old program is still running: resend after changing the increment, then power-cycle if needed.

DIFFERENTIATION

- Support: Provide a labelled diagram of variable, shake input, and forever display; sit with pairs on the first download.
- Extension: Ask stronger pairs to compare pocket vs sock placement and note which is more accurate, or to plan a reset button for a later lesson.
- Extension: Challenge them to explain in plain words why doubling the increment is an estimate, not a perfect fix.