

LESSON 61

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 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

- 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

Studio: Step Counter

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.