

Studio: Light Clapper

40 minutes

Project studios (optional extension sessions)

Built in micro:bit

Outcome 1.7

Outcome 1.8

WHAT THIS LESSON DOES

Students build a micro:bit light clapper that toggles the LED display when a clap is detected, then tune the sound threshold so claps trigger it but ordinary classroom talk does not.

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 sound-triggered light using input thresholds (LO 1.7)
- Tune the threshold so claps trigger it but talking does not (LO 1.8)

BEFORE THE BELL

- Students logged in to the platform with micro:bits, USB cables or Bluetooth pairing, and a browser ready for makecode.microbit.org
- Open MakeCode micro:bit and confirm the simulator sound control is visible for the test step
- Have a spare micro:bit and cable ready for quick swaps if a device fails to flash

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 project
4 min	content	Create a variable
4 min	content	Sound threshold
3 min	content	Detect a clap
4 min	content	Add the if then else
4 min	content	Turn it on
4 min	content	Turn it off
3 min	content	Test it in the simulator
2 min	content	Send the code
3 min	content	Make sense: what worked, what broke
2 min	content	Reflect
1 min	summary	What you covered

TEACHING MOVES

- Model the first blocks on the board, then let pairs continue while you circulate
- Stress that the threshold is a number they will change after real claps, not a fixed answer
- During device testing, ask pairs to try a clap, then normal talking, and note which value sits between the two
- Keep debugging language explicit: name the bug, the check they ran, and the fix

WHAT TO WATCH FOR

- Threshold left at 128 so talking or chair scrapes trigger the light: lower or raise the value and retest with a clap and with speech
- lightOn not updated in both branches, so the LEDs stick on or off: check that true is set when lights show and false when the screen clears
- Code only tried in the simulator: remind them to download to the micro:bit and retune, because real room noise differs from the slider

DIFFERENTIATION

- Support: provide a labelled diagram of on start versus on loud sound, and sit with pairs while they place the if-then-else
- Extension: challenge pairs to find the narrowest threshold band that still catches every clap in their row
- Extension: ask confident pairs to add a brief pause after a toggle so one clap cannot fire twice