LESSON 22

Microbit Finder

60 minutes | Microbit Masterclass

WHAT THIS LESSON DOES

Get started with this exciting project using two Microbits. Follow step-by-step instructions to code them as a 'lost' and 'finder' pair. Programme buttons, set radio groups, and track proximity with signal strength indicators.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand and utilise Microbit's radio communication feature.
- Create and manipulate variables in a Microbit project.
- Program Microbit's buttons to perform specific actions.
- Interpret signal strength to determine proximity between two Microbits.
- Apply coding skills to create a practical Microbit application.

BEFORE THE LESSON

- Two Microbits per group, both working. At least one needs a battery pack or USB power bank so a pupil can carry it around the room.
- Open and test https://makecode.microbit.org on a device first; check the school filter does not block it and that the download-to-Microbit step works.
- Have download cables ready, since the finished code must be flashed onto both Microbits.
- Clear a bit of floor space for the walking-around finder game at the end.

Microbit Finder

HOW THE LESSON RUNS

Introduction
Create a new Microbit project
Create 2 variables
Set the radio group
Set the mode
Send the message
Receive the message
Display how close
Download the code

TEACHING MOVES

- 1. Introduction. Hold up two Microbits and explain the game plainly: one is lost and calls out, the other is the finder that gets warmer as it nears it. This is the goal they are coding towards.
- 3. Create 2 variables. Stress that a variable is just a labelled box that remembers something. Have them name the two boxes aloud: mode remembers the device's job, signal remembers how strong the call is.
- 4. Set the radio group. Explain the radio group as a channel, like two walkie-talkies set to the same number. Both Microbits must be on group 1 or they will never hear each other.
- 5. Set the mode. Point out that A makes this device the finder and B makes it lost. The skull icon on B is so you can tell the two apart at a glance once both are powered.
- 6. Send the message. Clarify that only the lost device sends, and it sends forever. The exact words in the message do not matter; the finder listens for any string at all.
- 7. Receive the message. Explain signal strength runs roughly from -128 for weak up to -42 for strong. It is negative, so a bigger number means closer. This trips pupils up, so say it twice.
- 8. Display how close. Walk through the if-then-else together: strongest signal lights the full grid, weaker signals show less, no signal runs the else animation. Build one branch, test the idea, then add the rest.
- 9. Download the code. Have groups flash the same code to both devices, press A on one and B on the other, then play. Let them physically walk the finder towards the hidden Microbit.

WHAT TO WATCH FOR

- Pupils think a bigger negative number means a stronger signal, so they read -100 as closer than -50. Draw a number line on the board from -128 to -42 and mark which end is close. A signal of -50 is nearer than -70 because it is further right.
- Pupils set both Microbits to the same button, so both are finders or both are lost and nothing happens. Remind them one device needs A pressed and the other B. Point to the skull icon: only one Microbit should be showing it.
- Pupils forget to download the code to the second Microbit and expect the game to work. Make it a checklist step: same code goes onto both devices, then assign the roles. Only one carries the battery pack to walk around.

DIFFERENTIATION

- Emerging: Pair them with a partner who has the MakeCode site already open, and have them build just the two button blocks first before adding radio. Give them the LED display step as a copy-the-pattern task so they are not held up by the signal logic.
- Developing: Ask them to explain back to you what mode is storing and why the lost device sends forever. Have them test one if-then branch works before adding the next, rather than typing all the thresholds at once.
- Proficient: Challenge them to add a third signal level or change the LED patterns so the display fades more smoothly as they get closer. Ask them to add a sound or a different icon that plays when the finder is very close.