

LESSON 1

Exploring Microbits

60 minutes (2 periods)

Introduction to Micro:bit Basics

WHAT THIS LESSON DOES

Get started with programming a microbit in this hands-on lesson. You'll learn to create a project, display messages, and make your microbit react to button presses. Follow the steps to code and explore its exciting features!

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand the basic functionality and features of a microbit.
- Create a new project using the MakeCode for microbit website.
- Use the Project Editor to write and simulate code.
- Program the microbit to display numbers and text on its LED grid.
- Program the microbit to respond to button presses with specific actions.

BEFORE THE BELL

- Open makecode.microbit.org on the school network and confirm it loads on the machines students will use.
- Count out one micro:bit and USB cable per student or pair the day before. Check boards power on and cables actually transfer data.
- Have a spare micro:bit ready with a simple name-and-icon program already downloaded so you can demo the real board if a lead fails.

Exploring Microbits

HOW THE LESSON RUNS

What is a microbit?

Create a new project

The Project Editor

Add Our First Code!

Delete Some Code

Display Your Name

Show a Happy Face

Connect your Microbit

Play Some Music

Explore!

TEACHING MOVES

1. What is a microbit? Hold up a micro:bit. Point to the LED grid and the A and B buttons. Tell students they will program those parts today, first in a simulator, then on the real board.
2. Create a new project. Get every screen to makecode.microbit.org. Wait until each student has clicked New Project, typed a name, and reached a blank editor before you move on.
3. The Project Editor. On a shared screen, name three zones: simulator left, toolbox beside it, code area right. Say on start runs once at power-up and forever repeats.
4. Add Our First Code! From Basic, drop showNumber into on start. Have them change 0 to another digit and watch the simulator refresh before anyone touches a real board.
5. Delete Some Code. Show dragging the showNumber block back into the toolbox until it disappears. Confirm the simulator goes blank so they trust delete is safe.
6. Display Your Name. Build Input on button A pressed with showString inside. Insist they type their own name. Click the simulator A button together as a class check.
7. Show a Happy Face. Mirror the pattern on button B with showIcon. Open the icon dropdown and let them pick. Test B on the simulator before download talk.
8. Connect your Microbit. Talk through USB connect, Download, and copying the file to the micro:bit drive. Only then have them press A and B on the physical board.
9. Play Some Music. Add on button A+B pressed with a melody block. Test on the simulator first. If room sound is weak, have pairs listen close to one laptop.
10. Explore! Give a fixed explore window. Circulate asking what new block they tried. Remind them to download again after every change they want on the board.

WHAT TO WATCH FOR

- Students treat a working simulator as proof the physical micro:bit already has the program. After any edit, ask: simulator or board? Only call it done when they have downloaded and tested the real buttons.
- Students put showNumber or showString in forever and think the board is broken when the display flickers or restarts mid-scroll. Move display blocks into on start or a button handler. Explain forever repeats without pause unless they add a pause block.
- Students press A or B alone when the code is on A+B together, so the melody seems not to work. Have them hold both simulator buttons at once. On the real board, press A and B together deliberately, not one after the other.

DIFFERENTIATION

- Emerging: Sit them with a partner whose simulator already shows the name on A. Have the partner narrate each drag while they build the same blocks. Stay for the first toolbox find: Basic for showNumber, Input for the button. Let them change the name string themselves.
- Developing: Ask them to run the simulator check before every download so they separate editor mistakes from cable problems. If a block will not attach, have them read the slot shape aloud and find a matching block in the same category.
- Proficient: Challenge them to add a third reaction, such as a different icon on shake, using only blocks already in the toolbox. Ask them to explain their button handlers to a nearby pair and help that pair download to the board.