

LESSON 29

Microbit Dice

30 minutes

Microbit Basics

WHAT THIS LESSON DOES

In this step-by-step lesson, you'll create a new Microbit project and programme it to display a random number between 1 and 6 when shaken, emulating a dice. You'll learn how to detect a shake, show a number, and finally, show a random number.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand and utilise the Microbit project creation process.
- Programme the Microbit to detect a shake gesture.
- Display a specific number on the Microbit in response to a shake.
- Implement a random number generator to simulate a dice roll.
- Apply the learnt skills to complete a Microbit project and use it as a dice.

BEFORE THE LESSON

- Open makecode.microbit.org on the school network and confirm it loads (check filters and logins).
- Devices ready for each pupil or pair, charged, with sound or display visible for the on-screen simulator.
- If you have micro:bits, have them charged with USB cables ready for the final transfer step.

Microbit Dice

HOW THE LESSON RUNS

Create a new Microbit project

Detect a shake

Show a number

Show a random number

Microbit

TEACHING MOVES

- 1. Create a new Microbit project. Project the site, open a new blank project together, and wait until every device shows the editor before moving on.
- 2. Detect a shake. Have pupils add the on shake gesture block first. Name it as the trigger: nothing runs until the board (or simulator) is shaken.
- 3. Show a number. Place show number 0 inside the shake block only. Test a shake in the simulator so they see the fixed 0 before adding chance.
- 4. Show a random number. Swap the 0 for pick random 1 to 6 inside show number. Shake several times and check the display stays between 1 and 6.
- 5. Microbit. If hardware is available, guide download or transfer and let them shake the real board. If not, treat the simulator dice as the finished project.

WHAT TO WATCH FOR

- Pupils put show number or pick random outside the shake block, so nothing happens on shake. Ask them to point to what sits inside on shake. Move stray blocks back inside before testing again.
- Pupils use a range that includes 0 or goes past 6, so the result does not match a dice. Remind them a dice face is 1 to 6. Check the pick random limits read 1 and 6, then shake again.
- Pupils think they must have a physical micro:bit before the code can run. Show the on-screen simulator: click the shake control and read the number there first.

DIFFERENTIATION

- Emerging: Pair them with a partner and stay on the shake block plus show number 0 until that path works in the simulator. Sit with them to place each block in order: gesture first, then show number inside it.
- Developing: Ask them to shake several times and say aloud what each block does before they add the random range. If the number never changes, have them check that pick random sits inside show number, not beside it.
- Proficient: Have them explain the full path: shake, random 1 to 6, show number, then use the project as a dice for a short classroom game. Ask them to help a nearby pair debug block order without taking over the mouse.