

technology

Driving the floor robot

Lesson at a glance

Open with a floor robot stuck on its start square and a flag a few squares away — how do we give it instructions? Model algorithm and bug with one predict-run-observe cycle, stressing that a turn stays on the same square. Drive a short route on the IWB interactive together, then groups lay arrow cards, predict, program a Bee-Bot or floor robot, and debug wrong moves. Copy the final working sequence into the Investigation Journal and share one bug and fix.

Learning objectives

- Enter a short sequence of moves so a floor robot travels toward a target
- Predict where the robot will stop, then find and fix a wrong move

Before the bell – prep

Before the lesson, tape one ~4×4 grid mat per group with squares matching one robot step (15 cm for Bee-Bot). One floor robot, paper flag and arrow-card set per group; clear floor lanes. Journal pages stay at desks until groups leave the mats. Child-as-robot plus cards works if kit is short.

**Materials**

Item	Qty	Per	Source	Low-cost substitute
Bee-Bot or similar floor robot	1	group	school kit	a child acts as the robot and follows arrow cards across a taped floor grid
taped floor mat with squares matching one robot step (15 cm sides for Bee-Bot, or manufacturer's mat)	1	group	classroom	masking-tape grid on the hall floor with the same step-sized squares, or large squared paper sheets joined on the floor cut or marked to the robot's step length
paper flag or target card	1	group	classroom	a sticky note or small toy as the target
arrow or move cards (forward, turn left, turn right)	1	group	provided printable	arrows drawn on scrap card or sticky notes
Investigation Journal pages	1	pupil	classroom	a blank A4 sheet with space to draw arrows and mark yes/no
masking tape	1	class	classroom	painter's tape or chalk lines on a hard playground surface outdoors with adult supervision
ruler or metre stick (to mark 15 cm squares if taping your own mat)	1	class	classroom	use the manufacturer's Bee-Bot mat so measuring is not needed

Safety watch-point

Clear bags and chairs from floor lanes before robots run. No climbing over mats; keep fingers clear of wheels when pressing go. Supervise so robots stay on the taped grids.

Teaching moves

- **Steps the robot can follow:** Board only algorithm and bug with a concrete move list; say program lightly in passing. Demo the turn rule with a finger on the grid: turn spins on the same square, only forward advances. Run one full predict-enter-go-observe cycle (a deliberate wrong turn is fine) before groups try.
- **Plan the route on the board:** Drive the IWB interactive: 4×4 grid, robot bottom-left facing right, flag two right and one up. Pupils call forward / turn left / turn right; you drag. Hands up before run. Known-good path: forward, forward, turn left, forward. If it misses, fix one step only and re-run.
- **Program the floor robot:** Groups of 3–4: enterer, path-watcher, card-keeper. Cards laid in order before anyone presses go; after a miss, change the card first then the buttons. Circulate for the turn rule and random re-lists. Kit-short: robot station plus child-robot mats and rotate so every child presses go once.
- **Record our moves:** Hand journals as groups leave the mats. Copy arrows from the card line still beside the mat — not from memory. Release prompts in order: arrow line, yes/no reached target, circle the fixed step. Move-word cards support writers.
- **What was the bug?:** Two or three groups share one bug and fix. Revoice: a bug is a wrong step, not a naughty robot; order is why the fix works. Leave robots on the floor until after sharing so attention stays on the talk.

What it should show

A working short sequence lands the robot on the flag; groups predict before go and, on a miss, name and change one wrong step rather than inventing a new list. Common odd result: expecting a turn to also advance one square, so the robot stops short or faces the wrong way — restate the turn rule and re-run from the corrected cards.

Misconceptions & interventions

- **The robot knows the way or can guess where the flag is.** — Point at the buttons: it only does the steps we press, in that order. Clear the program and enter a deliberately wrong turn so they see it follow the bug.
- **A turn also moves the robot forward one square.** — Finger-demo on the grid: turn spins on the same square; only forward steps into the next square the way it faces. Have them fix that card and re-run.
- **On a miss, wipe everything and start a brand-new random list.** — Ask which single step went wrong. Change that one arrow card first, enter the same fix on the robot, and try again.

**Differentiation**

Emerging	Developing	Proficient
• Offer a ready three- or four-move route menu and stand with the group for the first clear and enter. • Child-robot with arrow cards if button entry is overwhelming — same predict-run-fix pattern.	• After one success, try a second nearby target still on a short path. • Prompt: say the stop square out loud before every go.	• Longer path needing two turns, still one clear goal. • Early finishers sketch a second shorter route they would try next, on the same journal page or told quietly to a partner.

**Cross-curricular hook**

Links to Maths positional language and sequencing — first, next, turn left/right on a grid path.

