

## technology

# How does it work? Steps inside an everyday job

## Lesson at a glance

Open by asking what would go wrong if a robot only got half the steps for tying a shoe or using a pencil sharpener. Model ordering the four Set A sharpener cards on the board, then groups order their own job set (sharpener, message or hand-wash), play robot exactly from the cards, and hide one card to spot the break. Pupils record the ordered steps and the missing step on plain paper or the Investigation Journal. Close with a display-only talk that names their ordered list an algorithm.

## Learning objectives

- Break an everyday process into ordered steps
- Follow steps exactly as a robot and spot a missing step
- Recognise that devices follow step-by-step instructions (an algorithm)

## Before the bell – prep

Print and cut one 4-card job set per group the day before, mixing Sets A, B and C; print one spare of each set for the board model and swaps. Keep Set A ready as the default. Clear carpet/floor space. Plain paper or Investigation Journal and pencils; a flat hand works as a pretend phone for Set B.

## Materials

| Item                                                                                   | Qty | Per   | Source    | Low-cost substitute                                                  |
|----------------------------------------------------------------------------------------|-----|-------|-----------|----------------------------------------------------------------------|
| step cards (one 4-card job set: pencil sharpener, sending a message, or washing hands) | 1   | group | classroom | write the same short step phrases on sticky notes or scrap card      |
| plain paper or Investigation Journal page                                              | 1   | pupil | classroom | any scrap paper with space to number steps and draw the missing step |
| pencils                                                                                | 1   | pupil | classroom | crayons or markers                                                   |
| clear floor or carpet space for play-robot                                             | 1   | class | classroom | groups act the robot standing beside their desks in turn             |
| pretend phone or flat card for message-set mime (optional shared prop)                 | 1   | group | classroom | robot mimes with an empty hand as the screen                         |



### Safety watch-point

Clear enough floor or carpet space so the robot can move without bumping furniture or other groups. Hand-wash and message sets are mime only — no real water or devices.



### Teaching moves

- **Jobs work in steps:** Project only the short board text. Lay the four Set A sharpener cards face up mixed, and with the class put them in order on the ledge or floor. Read left to right once and name the idea: steps in order, first to last, like a recipe. Do not say algorithm yet. Optional 30-second bridge: one card will go missing next — then send groups to their own sets.
- **Order the steps and play robot:** Groups of three or four get one job set only. First they order all four cards by reading aloud. Then one pupil is the robot and may do only what the card being read says — stop anyone who adds helpful extras. For the missing-step pass, one child secretly removes a card; the group names what failed and which step is gone. Prefer Set A for groups who need the clearest physical actions.
- **Record our steps:** On plain paper or the Investigation Journal, pupils number or draw the four steps in order, then draw or label only the missing step and what went wrong. Full sentences are optional. Circulate and ask: could a robot finish with only the steps you wrote? Early finishers borrow a second set from the spare pack and spot one missing step there — still on paper.
- **Devices follow steps too:** Display-only share. Point at a group's finished card line and introduce algorithm now: that clear list is a recipe for the job. Take one question at a time — which step did you hide and what went wrong; why must order stay; what fails if you skip a step when making toast, unlocking a door or loading the dishwasher. Revoice pupil ideas into the words algorithm and missing step.



### What it should show

Groups should line cards in a true first-to-last sequence (e.g. hold sharpener → pencil in → turn handle → pencil out). When one card is hidden, the robot job visibly fails in a way that matches that gap — no send means the message never goes; no turn handle means the pencil stays blunt. A robot that still 'succeeds' usually added an action not on the cards; re-run with only the spoken card.





### Misconceptions & interventions

- **Any list of actions is fine — order does not really matter as long as all the steps are somewhere.** — Swap two cards in their line and have the robot run that wrong order. Ask what broke, then restore first-to-last so they see order is part of the job.
- **The robot can guess the next move or fill in what is missing because they already know the job.** — Freeze the robot and restate the rule: only the card being read, nothing extra. Hide one card again and make them name the gap instead of acting it.
- **An algorithm is something only computers or phones have, not the card list we just built.** — Point at their ordered cards and say that clear list is the algorithm — the same idea a sharpener, tap or app follows, like a recipe.

### Differentiation

| Emerging                                                                                                                                                                                                                                                                                                                | Developing                                                                                                                                                                                               | Proficient                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Give Set A (sharpener) and keep all four cards visible while ordering; pair a confident reader to say each card aloud for the robot.</li><li>• For recording, number the cards 1–4 in order and draw only the missing step; a short label or spoken answer is enough.</li></ul> | <ul style="list-style-type: none"><li>• After one missing-step run, hide a different card and name what fails this time.</li><li>• Prompt: could a robot finish with only the steps you wrote?</li></ul> | <ul style="list-style-type: none"><li>• Invent one extra ‘wrong’ card (e.g. eat the pencil) and explain why it does not belong in the algorithm.</li><li>• Borrow a second set from the spare pack, order it, and spot one missing step on paper.</li></ul> |

### Cross-curricular hook

Link to English procedural writing and PE warm-up sequences — both need complete steps in the right order, like a recipe.