

Step by step: first algorithms

Lesson at a glance

Open by wondering how you would tell a robot the steps for getting ready for school. Model brushing-teeth steps in order, then deliberately swap two so the class sees the job fail, and name that ordered list an algorithm. Drive the algorithm-sequencer on the IWB together so a robot reaches a flag, then groups order picture-step cards and play robot with safe mime. Pupils record their ordered steps and a tick or happy face on the Investigation Journal, and close by naming everyday algorithms at home and school.

Learning objectives

- Put clear steps for an everyday routine into the right order
- Follow a short sequence of steps exactly when acting as a robot

Before the bell – prep

Print one mixed-up step-card set per group (brushing teeth, packing a bag, or making toast) and a three-card mini set for shorter sequences. Clear a small floor space for mime-robot play. Have the algorithm-sequencer interactive ready on the IWB in explore mode.

Materials

Item	Qty	Per	Source	Low-cost substitute
routine step cards (brushing teeth, packing a school bag, making toast)	1	group	classroom	write the five steps for one routine on sticky notes or scrap paper
Investigation Journal pages	1	pupil	classroom	plain paper with space to draw ordered steps and a tick or cross
clear floor space for play-robot mime	1	class	classroom	stand beside desks and mime in place

Safety watch-point

Robot play is safe mime only — no real water, food or toaster. Clear floor space and calm movement when children act the steps.



Teaching moves

- **Steps in the right order:** Before any new word, say five brushing-teeth steps in order and act them once. Deliberately swap two (brush before toothpaste) and ask what goes wrong. Only then label it: that clear list in the right order is an algorithm. Chorus the word — AL-guh-rith-um — several times.
- **Order the steps on the board:** Drive the algorithm-sequencer yourself; pupils call the order, you drag and run. Model forward, forward, forward to the flag first. Then run the deliberate bug (forward, turn right, forward), ask what went wrong, and rebuild the working path together.
- **Order the cards and play robot:** Give each group one mixed set. They order cards on the table, say the steps aloud, then one child mimes as robot while callers read one card at a time — no guessing, no extra moves, mime only. Protect time for one full order-and-run cycle; role-swap is extension only.
- **Record our steps:** Show the Investigation Journal page on the board first. Every pupil records two things only: the steps in order (numbers or left-to-right drawings) and a tick/cross or happy/sad face for whether the robot finished. Say the optional “what we changed” line only to groups who tried a wrong order.
- **Routines all around us:** Short partner then class talk: where else do we follow steps in order? Revoice ideas as clear steps in the right order. If talk stalls, prompt with the steps for washing hands before lunch.



What it should show

Groups should lay cards left to right in a sensible order and the mime-robot should finish the job when callers read one card at a time. Brushing teeth and toast need a strict start-to-finish order; packing a bag allows lunch box and books to swap in the middle. A robot who adds moves or guesses usually means callers skipped reading one card at a time — re-run with exact card-only instructions.



Misconceptions & interventions

- **“Algorithm is only something computers do.”** — Point back to brushing teeth or packing a bag; revoice that everyday routines at home and school are algorithms too — clear steps in the right order.
- **The robot-player adds helpful moves or guesses the next step instead of waiting.** — Freeze the play and restate the rule: only what the card says, no guessing and no extra moves. Re-read one card and have the robot do just that action.
- **“The order doesn’t really matter as long as all the steps are there.”** — Re-run a known fail from the worked example (brush before toothpaste, or zip the bag before packing) and ask whether the job still works.



Differentiation

Emerging	Developing	Proficient
• Offer the three-card mini set (get bag → put in lunch → zip closed) and sit with that group to order and run once together.	• After a successful run, ask why that order worked and which card would spoil the job if moved.	• Deliberately place one card wrong, run the mime, fix the bug together, and optionally sketch what they changed on the Investigation Journal.

Cross-curricular hook

Links to English oral language — sequencing a familiar routine clearly so a partner can follow it exactly.