

technology

Inputs, processes and outputs

Lesson at a glance

Open with toaster, tablet and automatic-door pictures and ask what they share. Hold IPO language back. Model the toaster on three board boxes (Input → Process → Output), then groups map one device card and sketch three boxes. Sort the automatic-door cards into columns on the IWB interactive, talk through what counts as an input, and act devices as human machines with one part broken. Pupils finish a labelled IPO map in the Investigation Journal for the exit check.

Learning objectives

- Map an everyday device as inputs, processes and outputs
- Act out a simple human machine that shows IPO clearly to the class

Before the bell: prep

Print device cards so every group gets exactly one (jigsaw mix of toaster, tablet, automatic door, not a full set per table). Scrap paper or mini whiteboards for three-box sketches. Cue the automatic-door drag-and-drop interactive on the IWB; sticky notes ready if it fails.

Materials

Item	Qty	Per	Source	Low-cost substitute
device cards (toaster, tablet, automatic door)	1	group	classroom	write one device name per scrap paper slip and read that card's text aloud from the lesson
scrap paper or mini whiteboards	1	group	classroom	back of an unused worksheet
Investigation Journal page	1	pupil	classroom	plain A4 sheet with three boxes drawn for input, process and output

Safety watch-point

Human-machine act-outs need clear floor space and no rough contact; keep performances short and nearly silent so watchers can see the chain break.



Teaching moves

- **Getting Started:** Show the three device pictures (or real objects) only. Thirty-second partner talk, then harvest ideas (electricity, buttons, 'they do a job') without naming input, process or output yet.
- **Inputs, processes and outputs:** Draw three empty boxes and label each word only as you fill it while mapping the toaster aloud: bread/dial/lever → heating and timer → hot toast and click. Say clearly, more than once: the toaster is not a digital system; digital systems use the same three headings with electronics or software in the middle.
- **Map one everyday device:** One card per group of three or four; six to seven minutes to agree IPO and sketch three boxes. Circulate with 'Is that going in, happening inside, or coming out?' Stuck groups act the device with their hands first, then name each action.
- **Build an IPO map on screen:** Run the door interactive: door groups open suggestions; everyone else judges each card as input, process or output. Target: Input: sensor, button; Process: control unit, motors; Output: door opens, optional beep. If motors are called output, revoice: motors are middle work; the open door is the output. Close: same three headings for toaster and tablet? Yes. Same cards? No. Which is digital? The tablet.
- **What counts as an input?:** Take the three on-screen questions one at a time; point to the active one. Revoice answers with IPO language and anchor only to devices already mapped. Draw out: electricity and user/sensor actions can both be inputs; toast is output not process; sound can be input or output depending on the job.
- **Human machine: act it out:** Same groups; one or two minutes to choose roles and rehearse. Default three groups, one of each device. Every machine runs twice: second run one part quietly refuses. Tell performers the break privately. Watchers say which part stopped and what they saw, not a fourth naming of IPO. Cap at about twelve minutes.
- **Draw your IPO map:** Investigation Journal in-lesson only: every pupil needs a usable map for the exit check. Require one clear labelled IPO flow left-to-right. Spell the three words on the board; scan and nudge unfinished maps before step 8.
- **How technologists think:** Revoice two or three maps or act-outs. Light Nature of Technology: technologists sketch IPO before code, parts or debugging. Exit check: hands up / thumbs. Point to input, process and output on your own journal map (fallback: shared board door map). Pack device cards for reuse.

What it should show

Toaster: inputs bread, dial, lever; process heating/timing; outputs hot toast and click, not digital. Tablet: taps/swipes/power; software/processor; screen and sound. Digital. Door: sensor or button; control unit and motors; door opens (optional beep). A group calling motors 'output' has mixed middle work with the result; re-sort to Process.

Misconceptions & interventions

- **‘Electricity is the only input’ or ‘the whole toaster is the process.’** Point back at the board toaster map: user actions (bread, dial, lever) go in; the process is the hidden heating and timing inside, not the whole device.
- **‘The toaster is a digital system’ because it was mapped with IPO.** Same three headings every time; digital means electronics or software in the process: tablet, Leap card reader, IWB. The toaster is a simple kitchen machine.
- **‘Input only means buttons.’** Use the automatic door: the motion sensor is an input with no button press. Sensors and taps count as inputs too.

Differentiation

Emerging	Developing	Proficient
• Allow a minimal three-box sketch with arrows; keep input / process / output spelled on the board. • If stuck on the card, act the device with hands first, then name each action as going in, middle, or coming out.	• During the board sort, ask judges to justify one card move using ‘going in / middle / coming out’ against their own sketch.	• On the journal map, add a sensor input or name two outputs (sight and sound); if mapping the toaster, note beside it that it is not a digital system. • In the act-out, notice aloud that a broken process can look like a broken input from the outside, and say what gave it away.

Cross-curricular hook

Link to Irish everyday systems (Leap card readers, shop self-checkouts and weather apps) as digital IPO in daily life.