

Ask, imagine and plan

Lesson at a glance

Open with four Irish garden birds (robin, blackbird, blue tit, chaffinch) and pin three user needs on the board: hold seed, keep seed dry, stable perch. Whole-class brainstorm feeder ideas, then groups shortlist one. Pupils sketch a labelled plan on the Investigation Journal Design Brief page, listing materials for next lesson. Close by locking three shared success criteria and storing plans ready for the build.

Learning objectives

- Define the user need for a feeder that serves Irish garden birds
- Brainstorm ideas and choose one design to develop as a group
- Sketch a labelled plan with materials and agree success criteria for testing

Before the bell – prep

Print one class set of bird fact cards or open the four-bird panel full-screen. Push desks into groups of 3–4. Have Design Brief and Plan pages ready but hand out only at the sketch step. Keep bottles, sticks and seed out of sight until the build lesson.

Materials

Item	Qty	Per	Source	Low-cost substitute
Irish garden bird fact cards (robin, blackbird, blue tit, chaffinch)	1	class	provided printable	project the four-bird panel and short traits full-screen on the IWB with no printing
Investigation Journal Design Brief pages	1	pupil	classroom	one shared Design Brief page per group
plain paper for extra group sketches	1	group	classroom	use the Design Brief page only
pencils and coloured pencils for labelling plans	1	pupil	classroom	pencil only

Safety watch-point

No cutting or building today. Remind pupils scissors and hard cuts wait for adult supervision in the build lesson; only plan and sketch now.

**Teaching moves**

- **Getting Started:** Show the four birds on the IWB and hold up fact cards if useful. Keep materials hidden. Ask which birds might visit your grounds and what would go wrong if seed got wet. Aim is birds-first thinking before any making talk.
- **What engineers do first:** Name user need once, then draw out the three must-dos: hold seed, keep seed dry, stable perch. Write them on the IWB and leave them up. Model aloud: “I think the biggest problem is wet seed, so any design must keep rain off.” Save design brief and success criteria labels for later steps.
- **Imagine: feeder ideas:** Four-minute whole-class brainstorm on the IWB—hanging bottle, tray, carton hopper, pot with perch all welcome. Three minutes for groups to shortlist, three to name the one idea they will draw. If quiet, prompt rain cover, perch place, and how it hangs without tipping. No building.
- **Sketch your design plan:** Hand out Design Brief pages now. Model a rough hanging-bottle sketch live: body, mid-height seed hole, thin stick perch, string loop, materials list. Circulate asking “Point to where seed stays dry” and “Point to the perch.” Stop once if you see fancy shading with no labels—engineers label so a stranger could build it.
- **Agree how we will test:** Let pupils propose checks, then lock three: holds seed; keeps seed dry under a light watering-can shower; stable perch under a gentle finger press or small weight—not live birds. Pupils write the locked checks on their plan in their own words. Revoice any “prettiest wins” talk back to the checks.
- **Reflect and set up the build:** Take two or three group voices naming one bird-linked reason for their design. Store Design Brief pages for the build. List common materials on the IWB and invite clean empties from home. Exit thumbs: point to seed store, rain cover, and perch on the plan.

What it should show

Each group leaves with one labelled feeder sketch showing seed store, rain protection and a stable perch, plus a short materials list and the three agreed checks written on the Design Brief page. A weak plan is often pretty shading with no labels or missing rain cover—send them back to add those before pack-away.

Misconceptions & interventions

- **Pupils jump to a fancy shape or “as big as possible” before thinking what the birds need.** — Point back to the three user needs still on the board. Ask which need their fancy idea actually meets; if none, they redesign against hold seed / keep dry / stable perch.
- **“The prettiest feeder wins.”** — Revoice: engineers judge against the user need and the three locked checks, not decoration. Have them point to each check on their sketch before they copy the wording.
- **A polished unlabelled drawing is treated as a finished plan.** — Stop the class once: “If a stranger cannot build from your page, the plan is not finished.” Require at least four part labels and a materials list.

Differentiation

Emerging	Developing	Proficient
• Offer sticky-note stems: “A hanging bottle with...” or “A tray with a roof that...”. Pair at the teacher table to place seed store, rain cover and perch on the sketch first.	• Once the core idea is labelled, add one extra feature already in reach—drainage hole or easy refill path—still on the same Design Brief page.	• Add a second small side view, or note how the same checks would apply if two groups build the same feeder type differently.

Cross-curricular hook

Link to Geography local habitats—Irish garden and hedgerow birds—and to English procedural labels on the design plan.