

Build a little boat that floats

Lesson at a glance

Open by holding up a simple foil boat and asking which shape will float best and hold the most, linking gently to Irish harbours and rivers. Teach float, load and improve one word at a time, then groups fold a foil sheet into a flat-bottomed boat with raised sides and float-check it empty. They predict a counter load, add counters one by one, make one shape change, and capture prediction, first load and the change on the Investigation Journal page before a short class talk on which boats held most.

Learning objectives

- Make a small boat that floats in a water tray
- Predict how many counters it will hold, then observe and improve the shape once

Before the bell – prep

Before the bell: fill shallow water trays, tear foil sheets ~20 cm square, and put counters or coins in small pots kept off the make tables. Lay towels by each tray. Keep modelling clay with you for leaky corners only; hold scrap paper and lolly sticks back for early-finisher sails.

**Materials**

Item	Qty	Per	Source	Low-cost substitute
aluminium foil sheets (about 20 cm by 20 cm)	2	group	supermarket	used clean foil flattened carefully, or thin card coated with a small piece of foil
Investigation Journal pages	1	pupil	provided printable	plain A4 paper with the four record prompts written on the board
modelling clay (optional seal for leaky corners)	1	group	classroom	a small ball of play-dough
lolly sticks (optional sail after boat floats)	2	group	classroom	strips of stiff card
scrap paper for optional sail	1	group	classroom	a small offcut from a magazine page
shallow water tray or washing-up bowl	1	group	classroom	one large class tray with groups taking turns
plastic counters or coins	20	group	classroom	identical buttons or small pebbles
towels or cloths	2	group	classroom	newspaper layers for blotting spills

Safety watch-point

Wipe spills at once; no splashing; roll sleeves up; keep counters and coins out of mouths.

Teaching moves

- **What helps a boat float?:** Read float, load and improve aloud one at a time, pausing and pointing at your demo foil boat after each meaning. Head off “heavy sinks, light floats” by holding the open boat beside a tight foil ball so the shape contrast is visible. Stress that each group will make just one change later.
- **Make your boat:** Hand out one foil sheet per child or pair only now — no clay, sticks or scrap on the tables. Model once: flat bottom, four sides up, pinch the corners. Circulate for clear bottoms, raised sides and pinched corners; offer a pea-sized clay seal yourself only if a corner still leaks.
- **Load, watch and improve:** Model the full cycle once at the front tray in about two minutes: wonder, predict, add counters one by one counting aloud, observe, then fold sides higher once. Send groups; insist on a spoken prediction, a first load count, and one improvement. A second load is bonus only if time — protect clock for the journal.
- **Record on your journal page:** Stop loading so pages stay dry. Pupils write or draw predicted number, first-load number, and the one shape change; scribes and before/after drawings are fine. Second-try comparison only if they actually retested — otherwise mark no second try. Give the full six minutes, not alongside tidy-up.
- **What we noticed:** Invite two groups to hold up boats and say one number and one improvement. Revoice high sides, wide bottom, pinched corners. Keep talk on which boats held most and what they shared; if someone says only light boats float, point to a heavy-load boat that worked because of shape.

What it should show

Boats with higher pinched sides usually hold more counters; wide shallow trays often hold fewer and ship water sooner. If every boat sinks at once, sides are open at the corners or the foil is too small — show pinching corners again. A second load after raising sides should often hold more, fewer, or the same; “more” is the common successful pattern.

Misconceptions & interventions

- **“Heavy things always sink and light things always float.”** — Hold the open high-sided boat beside a tight crumpled foil ball. Point out both are the same foil — shape (hollow middle, raised sides) is what keeps water out, not weight alone.
- **Pupils change several things at once (sides, bottom, clay, sail) and cannot say what helped.** — Stop the group and restate the rule: one change only today. Ask “What will you change once? Why?” before they touch the foil again.

**Differentiation**

Emerging	Developing	Proficient
• Offer a pre-folded corner demo they can copy, and scribe the three journal parts while they draw the before/after shape. • Pair at the teacher tray so pinching corners and one-at-a-time loading are modelled hand-over-hand.	• After one successful empty float, prompt “Why did water come in there?” before their single improvement. • If time, run the bonus second load and mark more, fewer, or the same on the journal.	• Once the empty boat floats, add a small scrap-paper sail on a lolly stick and check it still floats before loading. • Compare their boat with a watching group’s and say one shape feature that held more counters.

Cross-curricular hook

Link counting the load to Maths number, and name Irish harbours, the Shannon, or a local pond ferry the children know.

