

materials

Dissolving: what disappears in water?

Lesson at a glance

Open with a clear cup and a spoon of sugar, asking where sugar goes in tea — leave guesses uncorrected. Name the question and four materials, take partner predictions, then sort change / measure / keep-the-same cards on the fair-test-planner interactive. Groups add one level spoon of sugar, salt, sand and flour to identical cups, stir twenty times each, and jot results on the Investigation Journal. Close with a class table and the idea that a solution still holds the solid.

Learning objectives

- Plan a fair dissolving test by sorting change, measure and keep the same
- Observe and record which materials dissolve in water and which do not
- Explain that dissolving is not the same as disappearing forever

Before the bell – prep

Fill every clear cup to the same line from one jug of room-temperature water before the bell — sameness is settled before pupils arrive. Tray per group of four: four filled cups, labelled pots (sugar, salt, clean play sand, plain flour), spoons, paper towels. Print Investigation Journal pages; open the fair-test-planner interactive on the IWB.

**Materials**

Item	Qty	Per	Source	Low-cost substitute
identical clear plastic cups	4	group	classroom	clean clear yoghurt pots or jam jars
room-temperature water in a jug (used before the lesson to fill the cups)	1	class	classroom	plain cold tap water left to stand while you set up
sugar	1	class	supermarket	caster or granulated sugar from the staff room
table salt	1	class	supermarket	cooking salt from the staff room
clean play sand	1	class	school kit	clean fine grit from a washed plant pot saucer, fully dry
plain flour	1	class	supermarket	cornflour
teaspoons or craft spoons	4	group	classroom	one spoon per group, wiped between materials
paper towels	1	group	classroom	old tea towels
Investigation Journal page	1	pupil	provided printable	plain paper ruled into a simple results table

Safety watch-point

No tasting any cup. Wipe spills at once; tip flour gently so it does not puff toward faces; stop wild stirring. Wash hands after tidy.

Teaching moves

- **Getting Started:** Hold up the clear cup and spoon of sugar without tipping it in. Ask where the sugar goes in tea, take three or four quick ideas, and leave them uncorrected — the test settles it later. Three minutes is enough; trays stay off the desks.
- **Today's question and words:** Put the question and the four materials on the board, say the short dissolve line once, then send pairs to predict which will dissolve and why. Take a quick class vote. Keep solution and fair test light for now; model only a prediction-and-method stem aloud, not the outcome.
- **Plan the fair test:** Drive the fair-test-planner interactive card by card: material → Change; does it dissolve / how fast → Measure; amount of water, spoonful, how we stir, and the cup → Keep the same. Narrate why each keep-the-same matters, then ask what would make the test unfair. Name fair test with the sorted cards still on screen.
- **Run the dissolving test:** One child collects the tray; groups line up the four cups. Model sugar once at the front: level spoon, twenty slow stirs, look for clear water or bits, agree quick / a while / not at all. Circulate the eleven group minutes watching level spoons, calm stirring and no tasting. End with cups still and a whole-class glance: clear, grains, or cloudy?
- **Record what we saw:** Leave the I saw / I think example on the board. Pupils finish sugar, salt, sand and flour on the Investigation Journal from their jots: dissolves or not, timing word, and a short observation. If sugar failed, check keep-the-sames with the group rather than forcing the expected answer onto the page.
- **What does the evidence show?:** Pull two or three groups' results into a simple class table. Draw out sugar and salt dissolve, sand does not, flour clouds but is not a true dissolve. Name solution now: the solid is still there, mixed through. Contrast clear sugar water with cloudy flour water if anyone claims flour dissolved.
- **Wrap up and tidy:** Fold the exit check into pack-away: point to two cups and ask which dissolved and whether the sugar vanished forever — listen for still in the water / solution. Tip cups to the sink (sand to the bin if the trap is fussy), wipe, wash hands. Prioritise calm clear-up over a long recap.

What it should show

Sugar dissolves quickly and water stays clear; salt dissolves but often takes a while; sand does not dissolve — grains stay visible and sink; flour makes water cloudy (a suspension) and may settle, but is not a true dissolve. Slow sugar or salt usually means a heaped spoon or uneven stirring — check keep-the-sames and allow another twenty slow stirs.

**Misconceptions & interventions**

- **Pupils say the sugar has disappeared or been destroyed — gone forever.** — Point to the clear sugar cup and say it is still there, mixed through the water — that mixture is a solution. Ask why tea with sugar tastes sweet if the sugar has gone.
- **Pupils say flour dissolved because the water went white or cloudy.** — Hold the clear sugar cup beside the cloudy flour cup. Name that cloudy bits still floating or settling are not the same as dissolved; flour is suspended, not a true solution.
- **Pupils change the spoon size, water level or stir count between materials and still trust the comparison.** — Stop at the tray, point back to the keep-the-same cards on the IWB, and ask which thing they changed by accident. Re-run one material with a level spoon and the shared twenty-stir count.

**Differentiation**

Emerging	Developing	Proficient
• Let the group call out which fair-test bin each card belongs in while you drag; pair them at the teacher table for the first material so the level spoon and twenty-stir count are modelled hand-over-hand. • Accept ticks and the three timing words on the journal; the short I saw note can be one labelled sketch of the cup.	• Ask why a card cannot go in Change before it is placed. • After recording, add one sentence on the journal about which result surprised them.	• Justify each keep-the-same card with a because and spot one unfair change another group might make. • Sketch one cup before and after on the journal and explain why cloudy flour is not the same evidence as clear sugar water.

Cross-curricular hook

Link to everyday Irish kitchens — salt in cooking water and sugar in tea — and to Maths measures when matching level spoonfuls and equal water lines.