

materials

Dissolving: what disappears in water?

Lesson at a glance

Open with a clear cup and a spoon of sugar: does it vanish forever in tea? Pupils predict for sugar, salt, sand and flour, then sort change / measure / keep-the-same cards on the fair-test-planner interactive. Groups add one level spoonful to identical cups, stir twenty slow times each, and jot quick / a while / not at all on the Investigation Journal. Close by naming solution from the clear sugar and salt cups versus sand grains and cloudy flour.

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 four identical clear cups per group to the same line from one jug of room-temperature water before the bell. Set trays aside with labelled sugar, salt, clean play sand, plain flour, spoons and paper towels. Open the fair-test-planner interactive; print one Investigation Journal page per pupil.

**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. Tip flour gently so it does not puff near faces; wipe spills at once; stop wild stirring; wash hands after tidy.



Teaching moves

- **Getting Started:** Hold up the clear cup and sugar spoon without tipping it in. Take three or four quick ideas on where the sugar goes in tea and leave them uncorrected — three minutes only.
- **Today's question and words:** Board the question and the four materials, say the short dissolve line once, then partner-predict. Take a class vote; keep solution and fair test light until later. Model aloud only the stem: one level spoon, twenty stirs, look carefully — do not name the outcomes.
- **Plan the fair test:** Drive the fair-test-planner on the IWB: material → Change; does it dissolve / how fast → Measure; water amount, spoonful, stirring and cup → Keep the same. Narrate why each keep-the-same matters, then name fair test with the sorted cards still on screen.
- **Run the dissolving test:** Groups collect trays; model sugar once at the front with level spoon and twenty slow stirs. Agree timing words quick / a while / not at all. Circulate for level spoons, calm stirring and no tasting while groups run all four materials and jot after each cup.
- **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 note kept separate from the inference.
- **What does the evidence show?:** Pull two or three groups onto a 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 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. Tip cups to the sink (sand to bin if the trap is fussy), wipe, wash hands.



What it should show

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



Misconceptions & interventions

- **Pupils say the sugar has disappeared or been destroyed — gone forever.** — Point to the clear sugar cup and ask if the water would taste sweet. Keep the line: it is still there, mixed into the water — that mixture is a solution.
- **Pupils say flour dissolved because the water went white or cloudy.** — Hold the clear sugar cup beside the cloudy flour cup. Name any settled powder: cloudy with bits still there is not the same as dissolved.
- **Pupils change spoon size, water fill or stir count between materials and still trust the comparison.** — Stop at the tray and point back to the keep-the-same cards: if the method changed, we cannot tell whether the material made the difference. Re-run one cup with a level spoon and twenty slow stirs.



**Differentiation**

Emerging	Developing	Proficient
• Let the group call out which fair-test bin each card belongs in while you drag on the IWB; pair for the tray so one child steadies the cup while the other counts twenty stirs. • Accept ticks and the three timing words on the journal; supply the I saw / I think stem on the board for the inference line.	• Ask why a card such as how we stir cannot go in Change before they test. • After recording, add one journal sentence on which result surprised them or sketch one cup before and after stirring.	• Justify each keep-the-same card and name one thing that would make the test unfair. • Explain in journal language why cloudy flour is not a solution like clear sugar water, using I saw / I think.

Cross-curricular hook

Link to everyday Irish kitchens — salt in cooking and sugar in tea — and to Maths measures: same spoonful, same water line, same count of stirs.