

materials

Mixing materials: what happens?

Lesson at a glance

Open with a teacher demo of one spoon of sugar stirred into clear water and ask where the grains went. Pupils mark personal predictions for sugar, salt, sand and flour on the Investigation Journal page, then groups mix one small spoonful of each solid into separate cups and look closely. Class agreement feeds the yes/no results chart on the IWB. Pupils record observations against their earlier marks and close with a short talk on which solids seemed to dissolve.

Learning objectives

- Predict and observe what happens when different materials are mixed with water
- Describe which mixtures seem to disappear into the water and which do not

Before the bell – prep

Portion sugar, salt, sand and flour into small dishes the day before. Set trays with four clear cups, spoons and jugs of warm (not hot) water per group. Print Investigation Journal pages and open the class-results interactive on the IWB.

**Materials**

Item	Qty	Per	Source	Low-cost substitute
clear plastic cups	4	group	classroom	clean clear yoghurt pots or jam jars
hand-cool water in a jug	1	group	classroom	classroom tap water in a bottle
sugar	1	class	supermarket	a few teaspoons from the staff-room sugar bowl
salt	1	group	supermarket	table salt from the staff room
clean play sand	1	group	school kit	clean fine grit from a washed plant pot saucer, fully dry
plain flour	1	group	supermarket	a few spoons of flour from the staff room
plastic spoons	4	group	classroom	teaspoons from the staff room
cloths or paper towels for spills	2	group	classroom	scrap cloth or kitchen roll
Investigation Journal page	1	pupil	provided printable	plain paper with teacher-led oral prompts if printing fails

Safety watch-point

No tasting any mixture. Use warm, not hot, water. Wipe spills, empty cups, and wash hands at pack-away.

Teaching moves

- **A spoon of sugar:** Demo only: tip one spoon of sugar into a clear cup, stir so the class watches the grains disappear, and keep the cup visible. Ask where the sugar went and accept all ideas. Do not taste and do not rush into definitions yet.
- **Mixture, dissolve, predict:** Introduce mixture, dissolve and predict one spoken line at a time, pointing back at the sugar cup when you say dissolve. Board stays light: the three words, one child-facing line each, and the no-tasting rule.
- **Predict before we mix:** Every pupil marks a personal prediction for all four solids on the Investigation Journal page before any group stirring. Cups stay empty of solids. Offer stems — I think the ____ will disappear because... — and do not correct predictions.
- **Mix and look:** Model the full cycle once with sugar at the front, then groups run salt, sand and flour: one solid per cup, one small spoonful, half a cup of water, gentle stir. Circulate for spills, tasting and over-filling. Keep finished cups on the tray.
- **Look carefully together:** Whole-class talk with cups still visible. Sort into three child-friendly categories: seemed to disappear, still easy to see, water went cloudy. Prompt what eyes really see first, then gentle sense-making. Fold desk watchers in with agree/disagree questions.
- **Our class results chart:** Drive the IWB interactive yourself. Enter class yes/no agreement only after a short hands-up — never ask pupils to code 1 and 0. When flour comes up, name cloudy as still evidence of flour, not fully disappeared.
- **Record on your Investigation Journal page:** Cups stay in view. Pupils finish observe/draw against the predictions already marked. Aim for two full predict-observe pairs plus quick ticks for the rest. Stems on the board: I predicted... I saw...
- **What did we find out?:** Pull out: sugar and salt usually seem to dissolve; sand stays easy to see; flour often clouds the water. If someone says dissolved means gone forever, revoice: mixed in so well we cannot see the bits — not destroyed, and we do not taste to check.

What it should show

Sugar and salt usually seem to disappear after stirring; sand stays easy to see and settles; flour makes cloudy water even when separate grains are hard to pick out. A group whose salt still shows may have under-stirred or used too little water — re-stir gently and look again.

Misconceptions & interventions

- **Pupils say the sugar has vanished forever or been destroyed.** — Point back at the sugar cup and revoice: it mixed into the water so well we cannot see the bits — careful looking is enough; we never taste to prove it.
- **Pupils think sand will not dissolve only because the grains are big or heavy.** — After looking, hold sugar beside fine sand and ask what was alike about size but different about what happened — steer toward the kind of material, not size alone.
- **Pupils treat cloudy flour water as fully dissolved like sugar.** — Name the third category aloud: water went cloudy. Ask whether flour was more like sugar, more like sand, or something in between, and agree no if flour evidence is still visible.

**Differentiation**

Emerging	Developing	Proficient
• Sit at the teacher table for the first group mix; teacher models spoon, stir and look, then the pupil marks disappear / still see with a simple symbol. • Accept drawings or ticks for observe if words are a stretch; aim for one clear predict-observe pair first.	• After the three group cups, look again at flour beside sand and whisper one difference to a partner. • Use the board stems to finish two full I predicted... I saw... lines on the Investigation Journal page.	• Prompt: was flour more like sugar or sand, or in between — and what did your eyes see that makes you say that? • Stretch talk: does grain size alone explain sugar vs sand, or does the kind of material matter?

Cross-curricular hook

Tie to Maths data — the class yes/no chart grows bar by bar as groups agree each solid's result.