

materials

Mixing materials: what happens?

Lesson at a glance

Hold up a spoon of sugar beside clear hand-cool water and take quick guesses before anything is mixed. Name mixture and predict, then every pupil marks a yes-or-no prediction for sugar, salt, sand and flour on the Investigation Journal page. Model sugar dissolving at the front and leave that cup on display; groups stir salt, sand and flour, one fresh cup each. Record what each cup looks like while still in view, pool yes/no on the class interactive table, and close with talk on which solids seemed to disappear.

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

Print the Investigation Journal page. Set labelled pots of sugar, salt, clean play sand and plain flour on station trays with clear cups, spoons and a jug of hand-cool water. Keep a front demo cup ready for sugar. Cloths for spills; no hot water.

**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 hand-cool water only — never hot. Wipe spills at once; wash hands when finished.

Teaching moves

- **Getting Started:** Hold the sugar spoon beside the clear cup and do not mix yet. Take three or four quick guesses only — keep it light and curious. Have the four station materials ready out of sight.
- **What happens when we mix?:** Talk mixture and predict from the short on-screen wording; do not write a glossary. Hold the word dissolve back until after the sugar demo so pupils have something real to attach it to.
- **What do you predict?:** Show each material in turn and ask whether it will seem to disappear or still be seen, and why. Every pupil must mark a quick prediction for all four on the Investigation Journal before any stirring. Finish with a brisk think-pair-share on one material.
- **Mix and watch:** Model one full cycle with sugar at the front: wonder, predict, half-teaspoon into hand-cool water, stir about twenty seconds, then name dissolve when the grains vanish. Leave that cup on display. Send groups to try only salt, sand and flour — small spoonfuls, one fresh cup each. Early finishers may match the front sugar cup or watch another group; no extra kit.
- **Look carefully:** Have pupils hold each cup to the light, including the front sugar cup. Prompt: Is the water clear? Any bits? Where are they? Push words like clear, cloudy, grains at the bottom. Recording happens now beside the predictions while cups are still in view — do not wait for the class chart.
- **Record on the board:** Drive the interactive table on the IWB: Sugar, Salt, Sand, Flour with Seemed to disappear? yes or no. Talk in child language first, then type the class answer. Agree flour is no because cloudy still shows a change. Read the finished table together and let pupils tick the agreed result on their journal.
- **Investigation Journal:** Four-minute finish-and-check. Support with stems I predicted... I observed... Check drawings match the cups. Do not allow fresh predictions now that class results are public.
- **What did we find out?:** Revoice: sugar and salt usually seem to disappear; sand stays as grains; flour makes water cloudy. Gently correct gone forever talk. Link to squash, hot chocolate and baking. Wipe tables, return materials, wash hands.

What it should show

Sugar and salt usually seem to disappear — water mostly clear with little or nothing on the bottom after good stirring. Sand stays visible and settles. Flour makes water cloudy or milky and does not fully disappear (class marks no). Grains still showing in sugar or salt usually mean too big a spoonful or too little stirring — remodel with a tiny amount.



Misconceptions & interventions

- **Pupils say the dissolved sugar or salt has gone or been destroyed.** — Point back at the clear cup and say the material mixed into the water so well we cannot see the bits — it is still there as a mixture. Keep it age-gentle; no tasting.
- **Pupils say sand stays only because the grains are big and heavy.** — Accept that as a starting thought, then ask what was alike about the materials that seemed to disappear versus the ones that did not. Note that sugar crystals can look a similar size to fine sand.
- **Pupils want to mark flour as disappeared because the white powder is no longer sitting as a dry heap.** — Hold the cloudy cup to the light and agree as a class that cloudy means we can still see a change, so mark no.



Differentiation

Emerging	Developing	Proficient
• Pair at the teacher table for the first stir; offer tick/symbol recording and spoken stems I predicted... I observed... rather than full sentences. • Focus careful looking on two cups first (e.g. sugar demo and sand) before adding salt and flour.	• Prompt a why after each observation: Why do you think this one still shows bits? • Ask them to compare two cups side by side and say one likeness and one difference.	• Challenge them to explain why flour is no even though it looks different from sand, using clear/cloudy language. • Early finishers watch another group and whisper whether that mixture matches their prediction — no extra kit.



Cross-curricular hook

Link to everyday cooking talk — squash, hot chocolate and baking — and to English describing words: clear, cloudy, grains, disappeared.

