

Build a strong tower

Lesson at a glance

Open by holding up the soft toy and a sample kit and set the challenge: tallest free-standing tower that can hold the teddy. Pairs talk about what stops a tower tipping, then sketch a quick plan naming the wide base. They build from newspaper, sticky rolls, cups and card, predict, and gently place the teddy. Close by drawing the tower on the Investigation Journal page and sharing one feature that helped it stand.

Learning objectives

- Build a free-standing tower from limited materials that holds a light object
- Say one feature (such as a wide base) that helped the tower stand

Before the bell – prep

Pre-count one kit per pair: 4–5 newspaper sheets, one masking-tape roll, about four paper cups, card offcuts, one small soft toy, plus scrap paper for plans. Push desks for floor or table space. Optionally pre-roll a few newspaper tubes so pairs spend build time on base and joins.

Materials

Item	Qty	Per	Source	Low-cost substitute
newspaper sheets	5	group	classroom	scrap A3 paper or old worksheets
masking tape roll	1	group	classroom	sticky tape or washi tape
paper cups	4	group	classroom	rolled paper tubes taped closed
card offcuts	4	group	classroom	cereal-box card cut into small pieces
small soft toy	1	group	classroom	a light beanbag, a sock ball, or a small eraser
scrap design paper	1	group	classroom	back of a used worksheet or a journal page margin
Investigation Journal page	1	pupil	provided printable	plain paper for a labelled tower drawing



Safety watch-point

Place the teddy gently; stand clear when towers topple; catch falling cups before faces. No running with towers; mind fingers at joins; clear floor trip hazards at tidy-up.



Teaching moves

- **Getting Started:** Pair children before talk begins. Hold up the teddy and one sample kit only — name the challenge lightly and park early answers with a nod. Keep kits back so pairs keep listening.
- **What makes a tower strong?:** Leave the IWB on the open question while pairs talk. Take three ideas. If nobody names a wide base, stack cups narrow vs wide once; if joins go unmentioned, point at the sticky roll. Stop short of building a finished tower they will copy.
- **Plan your tower:** Name each kit item with the object in hand. Give one scrap of design paper per pair. Circulate: 'Where is your wide base? What will you roll or stack first?' Frozen pairs get two starters only — triangle of cups, or newspaper tubes.
- **Build your tower:** Hand kits out now. Show one tight newspaper roll at the front — a loose roll bends and reads as failure. Coach with questions, not fixes: wider bottom, loose join, triangle of cups. Cheer when towers fall; ask what they will change. Two-minute warning to steady the top.
- **Will it hold the teddy?:** One spoken predict-try-observe per pair, not a fair test. Hold the Journal back. Teddy goes on gently; stand clear if it topples. One quick fix and retest only if time remains.
- **Draw what made it stand:** Ask first for the drawing with the base shown clearly. Scribe a short board bank (wide base, cups, tubes, steady, wobbly) so children can copy one word or you/partner scribe a spoken idea. Collapsed towers still draw what they tried and one change.
- **Share what helped:** Sample three or four pairs, one sentence each. Hands-up check for wide base, strong tubes, firm joins. Revoice the two anchors: wide base and stands on its own. Close by noticing bottoms of towers, cranes and steeples.



What it should show

Successful towers stand alone and hold the teddy on a flat top; most that work use a wider base than top, firm tape joins, and/or rolled tubes or a triangle of cups. Towers that tip usually have a skinny base, loose joins, or a soft roll. Affirm fixing after a fall — that is the engineering habit.



Misconceptions & interventions

- **‘Taller is always better’ — pupils stack high without steadying the bottom and are surprised when it topples.** — When a tall stack falls, ask ‘Was the bottom wider than the top?’ Point back to their plan’s wide base and invite one base fix before retesting.
- **Pupils think the teacher will build or show the winning tower, so they wait or copy instead of choosing.** — Keep modelling to one tight roll and the narrow-vs-wide cup stacks. Coach with questions only so the design choices stay theirs.
- **A loosely rolled newspaper tube ‘doesn’t work’ means ‘I’m no good at this’.** — Show once at the front that a tight roll stands and a loose one bends — name the roll, not the child.

Differentiation

Emerging	Developing	Proficient
• Offer pre-rolled newspaper tubes and aim for a short steady tower that holds the teddy; prompt them to point to the wide base on their plan. • If a pair freezes at planning, give only the two starters: triangle of cups, or tubes joined with sticky rolls.	• Once the tower stands alone, invite one base or join fix and a second gentle teddy test. • Ask them to name aloud which material they used first and where the broad bottom is.	• Once free-standing and teddy-steady, go taller and say one feature (wide base, firm joins, strong tubes) that made the extra height possible. • In the share, listen for a feature another pair used and say one they might try next time.

Cross-curricular hook

Link to local tall structures — church steeple, site crane, water tower — and notice whether the bottom looks wide or narrow.