

Lesson 35 · engineering

Test, Iterate and Present With Peer Feedback

Lesson at a glance

Groups pull out the prototype and Design Brief they built earlier in this project and test it honestly against their own success criteria, writing what they see on the PrototypeEval page and measuring where a criterion has a number. Like-for-like results pool into the data-recorder chart on the IWB; others report aloud. Each group then takes one improvement from peer feedback, re-tests it, and gives a one-minute talk on user need, design, evidence and change.

Learning objectives

- Test a prototype against its own success criteria and record what happens
- Make one iteration based on evidence and peer feedback, then re-test
- Present the user need, the design, the evidence and the improvement made

Before the bell – prep

Gather each group's test kit the day before — small weights, a water tray, a timer, whatever their criterion needs — and clear desk space at the back for load tests. Have spare junk-modelling materials ready so every group can make its one improvement. Make sure each pupil has their PrototypeEval page and Design Brief out before you start.

Materials

Item	Qty	Per	Source	Low-cost substitute
the group prototype (built earlier in this project)	1	group	brought from home	a rough re-build from the group's Design Brief if a prototype was damaged
small weights for load-testing	1	group	school kit	bags of dried beans or coins in a small tub
water tray	1	group	classroom	a washing-up basin
timer or stopwatch	1	group	school kit	the classroom clock with a second hand
spare junk-modelling materials for the improvement	1	group	classroom	clean recycling brought from home
PrototypeEval page	1	pupil	classroom	none



Safety watch-point

Push desks back so load tests have clear space and nothing drops onto feet; mop any spills from the water tray straightaway so the floor stays dry underfoot.



Teaching moves

- **Getting Started:** Keep it quick. Read one group's success criteria aloud as a worked example so every group re-anchors on their own before testing. Ask: what does a good solution have to do, and how will we know it works?
- **What We Are Doing Today:** Read the three-word table from the screen fast — don't lecture. Model good feedback with 'two stars and a wish', and head off vague praise: insist feedback names a specific part, not just 'it's nice'.
- **Test Against Your Criteria:** Circulate and press for honesty: what did you actually see, did it pass or not quite? A failed criterion is data, not failure. Hold groups to the on-screen reconciling rule — if two test numbers differ, run a third and record the middle value.
- **Record and Chart the Results:** Drive the data-recorder on the IWB. Only chart groups that measured the same quantity in the same unit — never mix grams and seconds on one axis. Pass/fail and different measures stay oral. Steer firmly away from 'biggest number wins': each design was made for a different user.
- **Gather Feedback and Iterate:** Hold each group to a single improvement — choosing the most important change is the learning. Ask: which change makes the biggest difference to the user? Then insist they re-test the same criterion so they have evidence it helped.
- **Present the Design and the Evidence:** Keep each talk to about a minute using the four-part frame on the board: user need, design, evidence, improvement. Invite one specific question from the audience after each group — 'what would you have tested next?'

What it should show

Expect most criteria to pass, with at least one 'not quite' per group — that near-miss is exactly what points to the iteration. After a well-chosen change, the re-test of the same criterion should show a measurable improvement. A group whose two test numbers disagree wildly usually changed the setup between tests (different drop height, extra push); have them re-run consistently and take the middle of three.



Misconceptions & interventions

- **Pupils think the group with the tallest bar on the chart made the best design.** — At the data-recorder, remind them the bars only compare groups who measured the same thing the same way, and each design was judged against its own user's criteria. A shorter bar that still meets its criterion is a success.
- **Pupils record what they hoped would happen rather than what the test actually showed.** — As they write on the PrototypeEval page, ask 'did it pass, or not quite?' and treat a fail as useful data that points straight at the improvement.
- **Pupils want to change several things at once when they iterate.** — Hold them to one change and re-testing the same criterion — otherwise they can't tell which change helped. Ask which single change matters most to the user.

Differentiation

Emerging	Developing	Proficient
• Give the group one criterion to test first and a simplified PrototypeEval row — pass or fail — before adding measured numbers. • Pair with the teacher table to rehearse their one-minute talk using the four-part frame.	• Ask 'why did the change help?' and have them explain the fix to the group they swapped prototypes with. • Have them run the third reconciling test and work out the middle value themselves.	• Ask them to critique whether their own test was fair — did anything change between the two trials? • Fast finishers observe the next presenting group and prepare the one specific audience question.

Cross-curricular hook

Tie to the Maths Data strand — pupils read the pooled bar chart, comparing bars only within a like-for-like set of measurements.