Mission: Get the toys across!

Bridging the Gap • Ages 4–9 • 45–60 minutes + reading

Big question

How can we make a bridge across a 15 cm gap that carries five identical toy cars, one at a time? Children plan, build, test, and improve a model; success is evidence-led redesign, not a contest.

Learning intentions

Identify a gap, supports and span; predict before testing; keep a test fair; explain how one design change affected the bridge. Useful words: span, support, load, brace, evidence, redesign.

After the story: talk, sketch, connect

Ask: What problem did the characters notice? Which clue would help us choose a material? When something failed, what could the team learn? Partners sketch a “before” and “after” bridge idea and finish: “A helpful teammate can ___.” Do not require a particular page or memorized wording.

Prepare one team tray

Two stable stacks of books or blocks; ruler; two equal-size pieces of thin cardboard or cardstock (about 20 × 10 cm); 12 paper straws; 30 cm masking tape; 5 identical toy cars; pencils; student handout. Scissors are teacher-managed. Materials are a design budget, not a required recipe.

Set the scene

Use a table, not a floor crossing or elevated walkway. Set supports 15 cm apart with level tops. Mark the gap with tape. The bridge is for toys only. Check for sharp cardboard edges and loose small parts; choose large age-appropriate toys and supervise younger children. Keep loads away from table edges.

Team jobs

Rotate: designer draws; builder handles materials; tester rolls cars; reporter records. In pairs, combine roles and swap after the first test.

Build • Test • Improve

Bridging the Gap • Teacher notes

1. Place supports 15 cm apart. Agree that every team will use this gap and the same five cars. Draw a first plan and circle where the supports touch the bridge.

2. Build a flat deck first. Use tape to join materials; do not tape the deck to furniture. Predict how many cars will cross without falling.

3. Roll ONE car slowly across. Add the next car only after the previous one reaches the far support. Record each successful crossing. Stop if the bridge slips or breaks; do not catch falling toys at an edge.

4. Keep the gap and test cars the same. Change ONE feature: fold a side rail, add a triangle brace, or change how a joint is secured. Sketch and label that change.

5. Repeat the same slow crossing test and compare. If you change material too, say that more than one feature changed and you cannot tell which change caused the result.

6. Hold a bridge gallery walk: “I notice ___; I wonder ___; our evidence is ___.” Celebrate thoughtful redesign even if the bridge does not carry every car.

Suggested timing

Connect to story 8 min; plan 7 min; first build 10 min; test 5 min; redesign 10 min; share 5 min. Spread over two sessions if children need more building time.

Important model distinction

The website uses fictional load scores. A real straw bridge is not guaranteed to fail at two cars, nor cardboard to hold five. Shape, joints, dimensions, support and car mass matter. Use what the classroom bridge actually does as evidence; do not force an expected result.

Teacher thinking tools

Bridging the Gap • Teacher notes

Notice learning, not just the final product

Listen for a prediction, a recorded outcome, and a named design change. Ask: “What stayed the same? What did you notice, rather than guess?” Photograph the first and revised bridges if school permissions allow.

Teacher look-fors / possible answers

Triangle bracing can reduce changes in shape, but weak joints can still fail. Folded cardboard may resist bending better than a flat sheet of the same material. A wider support contact can reduce slipping. Several different solutions are possible.

Extend the adventure

Compare folded and flat versions of the same cardboard. Keep the gap, cars and rolling method unchanged. Link to art: draw a bridge for an imaginary place and label what is decorative versus structural.

Make room for every learner

Ages 4–6: draw, point, act out a prediction, or dictate to an adult; work with a partner. Ages 7–9: label a diagram, record evidence, and explain a change. Offer large-print copies, pre-cut materials and picture choices. Accept oral responses; do not assess handwriting as science understanding.

Exit ticket

“At first I thought ___. My evidence showed ___. Next I would ___.” Invite children to share one kind, helpful thing a teammate did.

Before copying

Print student pages 1–2 single-sided. Set out ruler and pencils. The two designs on the handout are children’s own plans, not templates with a single right answer.