

# Building Bridges : Design & Technology : Year 5/6

	Learning Objective	Overview	Assessment Questions	Resources
<b>Lesson 1</b>	To explore ways in which pillars and beams are used to span gaps.	Children will learn about how simple bridges are constructed using beams, pillars or piers, then make and test beam bridge designs.	<ul style="list-style-type: none"> <li>Can children use technical vocabulary to explain how beam bridges are constructed?</li> <li>Do children understand the impact better bridge design has had on daily life?</li> <li>Can children investigate and explore the effectiveness of different beam/pillar designs?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheets 1A/1B/1C</li> <li>Paper, card, scissors, glue, sticky tape, sets of weights, toy cars.</li> <li>Testing Pillars (FSD? activity only)</li> </ul>
<b>Lesson 2</b>	To explore ways in which trusses can be used to strengthen bridges.	Children will learn how trusses are used in bridge design to spread out compression forces. They may then either build and test model truss bridges, or use software to explore how truss bridges may be constructed.	<ul style="list-style-type: none"> <li>Can children use technical vocabulary to explain how truss bridges spread the load of objects travelling across them?</li> <li>Can children apply their knowledge of how to stiffen and strengthen structures?</li> <li>Can children evaluate their models against established design criteria?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheets 2A/2B/2C</li> <li>Truss Patterns</li> <li>Art straws and sticky tape; sets of weights; toy cars; K'NEX, Meccano or similar construction kits</li> </ul>
<b>Lesson 3</b>	To explore ways in which arches are used to strengthen bridges.	Children will learn how arches are used to spread and redirect compression forces acting on bridges. They will then build and test model arch bridges.	<ul style="list-style-type: none"> <li>Can children use technical vocabulary to explain how arch bridges are constructed?</li> <li>Can children use technical vocabulary to explain how arch bridges work?</li> <li>Can children build and test models to find a strong bridge design?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheets 3A/3B/3C</li> <li>Card, paper, sets of weights, rulers, plasticine.</li> <li>Challenge Card (FSD? activity only)</li> <li>Modelling materials (clay/plasticine/play dough/polystyrene/sponge) (FSD? activity only)</li> </ul>
<b>Lesson 4</b>	To understand how suspension bridges are able to span long distances.	Children will learn about how suspension bridges use tension to support bridge decks spanning large distances. They may then either build and test model suspension bridges, or research and write about iconic suspension bridges.	<ul style="list-style-type: none"> <li>Can children explain how tension and compression forces are distributed by suspension bridges?</li> <li>Can children build a model suspension bridge that will support a given weight?</li> <li>Can children evaluate the designs of others and consider their views?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheets 4A/4B/4C</li> <li>String, scissors, art straws, card, paper, sticky tape.</li> <li>Photo Cards (FSD? activity only)</li> <li>Famous Bridges (FSD? activity only)</li> </ul>
<b>Lesson 5</b>	To develop criteria and design a prototype bridge for a purpose.	Having been presented with a design brief, children must develop criteria for a bridge design that will meet the terms of the brief. They will then either design a bridge according to their criteria, or generate more criteria for a range of given design briefs.	<ul style="list-style-type: none"> <li>Can children write design criteria according to a given brief?</li> <li>Can children design a prototype model according to design criteria?</li> <li>Can children work collaboratively to produce a prototype according to an agreed design?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheets 5A/5B/5C</li> <li>Art straws, scissors, paper, card, sticky tape, glue.</li> <li>Challenge Cards (FSD? activity only)</li> </ul>
<b>Lesson 6</b>	To analyse and evaluate products according to design criteria.	Following on from the previous lesson, children will consider ways in which they might test their bridge design once constructed. They will then build and test their designs.	<ul style="list-style-type: none"> <li>Can children devise tests to analyse a product according to design criteria?</li> <li>Can children evaluate their product according to design criteria?</li> <li>Can children consider the views of others and think of ways to improve their work?</li> </ul>	<ul style="list-style-type: none"> <li>Slides</li> <li>Worksheets 6A/6B/6C</li> <li>Bridge Evaluation A/B</li> <li>Bridge Builder Certificate (FSD? activity only)</li> </ul>