

Brough Primary School – Curriculum Intention

Plan 2024 - 2025



Subject: Design and Technology Year Group: Year 2		Area of learning: Build Structures <i>Focus - Strengthening and stiffening structures.</i>
Links to previous work/Remember when	<p>The children have not yet covered a structures unit but during Year 1 and during Autumn and Spring terms in Year 2, the children have learned about investigating existing products, designing a product against a set design criteria, making a product by following their design and then evaluating the product against the design criteria.</p> <p>They have experience of cutting accurately during their textiles project in the summer term of Year 1. They have completed a history unit of work about bridges and this unit will follow on from the learning in history.</p>	
Term	Key Skills to be taught	
Summer 2025 What the children should know at the end of this series of lessons	<ul style="list-style-type: none"> ● Design purposeful, functional, appealing products for themselves and other users based on design criteria ● Generate, develop, model and communicate their ideas through talking, drawing and mock-ups. ● Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] ● Select from and use construction materials according to their characteristics. ● Explore and evaluate a range of existing products ● Evaluate their ideas and products against design criteria ● Build structures, exploring how they can be made stronger, stiffer and more stable 	

Vocabulary

structure, strengthen, stiffen, freestanding, truss, arch, suspension bridge, support beams, triangular, engineer, span, laminate, corrugate, fold, design criteria, evaluation

Sequence of learning	Learning Objectives/Outcomes	suggested Lesson Outline
1	Learning Objective: To investigate existing bridges and what makes them strong structures. Key Knowledge:	Recap – What have we learned about bridges in history? What kind of bridge is the Humber Bridge? What makes it strong? Do we know of any other famous bridges? Children to record

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		<p>Show the children a range of different bridges from around the world.</p> <p>What do they notice about them? Are there any shapes that they can see in each of the bridges? Look for arches and triangles.</p> <p>Watch the videos about structures and strengthening. https://www.bbc.co.uk/cbeebies/watch/woolly-and-tog-three-bridges</p> <p>https://www.bbc.co.uk/bitesize/articles/z2kncxs</p> <p>https://www.bbc.co.uk/programmes/p0118l2p</p> <p>Children Record Draw their favourite bridge and label what it is made from and what makes it strong, e.g. arches, triangles, tall towers, steel or glass to reinforce.</p> <p><i>Plenary</i></p> <p><i>Look at the video about Isambard Kingdom Brunel who designed some of the most famous bridges - tell the children that he was an engineer - someone who designs and make things</i></p> <p>https://www.bbc.co.uk/bitesize/articles/znj32sg</p>
2	<p>Learning Objective: To learn to use strengthening and stiffening techniques.</p> <p>Key Knowledge:</p>	<p>Recap – What makes a bridge strong? What is a structure? Who was the famous engineer who made many famous bridges?</p> <p>Children to record</p> <p><i>Show children some ways to make structures stronger:</i></p> <p><i>: Lamination</i></p> <p><i>: Corrugation</i></p> <p><i>: Towers</i></p> <p><i>: Arches of card under the bridge.</i></p> <p>Children experiment with different ways to make their bridges stronger.</p> <p>Test different ideas and record - either in a table, photographs, poster, etc.</p> <p>Talk to the children about which methods were the best to create strength. Talk about triangles</p>

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		being strong shapes and show on example bridges.
3	<p>Learning Objective:</p> <p>To design a freestanding bridge that uses strengthening and stiffening techniques.</p> <p>Key Knowledge:</p>	<p>Recap - Recap on the different methods used to strengthen sheets of card/paper. Recap which were the best methods - which made the strongest bridges?</p> <p>Children record</p> <p>Give children the design criteria for their bridge project.</p> <p>: It must be able to hold at least 18 cubes in the centre of the bridge.</p> <p>: It must cross a distance of 20cm</p> <p>: It must be made out of no more than 2 sheets of A4 paper</p> <p>: The bridge supports will be made from cubes</p> <p>: You can only use glue and scissors.</p> <p>Talk to the children about the designs that they could make - how are they going to stiffen the paper? How are they going to strengthen the paper?</p> <p>Children to design and label their bridge design. Label their strengthening and stiffening features.</p>
4	<p>Learning Objective:</p> <p>To use strengthening and stiffening techniques to make and test my bridge.</p> <p>Key Knowledge:</p>	<p>Recap</p> <p>Remind children of the idea of strengthening and stiffening. Remind children of their designs.</p> <p>Children record</p> <p>Remind children to cut carefully and accurately. Remind children that the span of the bridge needs to be 20cm long. Children to make their design. Did they have to make any adaptations as they were making it?</p>
5	<p>Learning Objective:</p> <p>To evaluate the finished product against the design criteria.</p> <p>Key Knowledge:</p>	<p>Recap</p> <p>Remind children of the idea of strengthening and stiffening. How do engineers make bridges strong? What shapes are strong shapes? What were our design criteria?</p> <p>Children record</p> <p>Children to reflect on their bridge - did it work? How many cubes could it hold? Did it fulfill the design criteria? What was the best thing about your bridge? How did you strengthen and stiffen?</p>

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		Could you change anything about it to make it stronger?
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Learning Outcome/product

Can the children create a bridge that is strengthened and stiffened to be freestanding?

Assessment records

List only those children who have not achieved the expected outcomes.

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