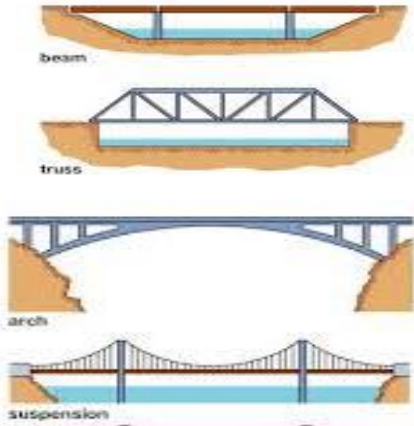




Knowledge Organiser	Subject: Design and Technology	Topic: Bridges	Year: 5
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<u>Key Knowledge</u> <u>Technical knowledge I have already learnt about structures</u> 'Structures' refer to how things are put together to make them strong and stable. Structures can be made from different materials like wood, plastic, metal, or even paper! Buildings, bridges, towers, and even chairs are all examples of structures that we see around us every day. Structures are important because they help things stay strong and not fall apart. Imagine building a tall tower with weak materials – it would wobble and collapse! By understanding how structures work, we can make sure our designs are safe and durable. Types of Structures There are different types of structures that serve different purposes: • Frame structures: think of a skeleton that gives support and shape to a building. E.G. A skyscraper • Shell structures: these are like the outer layer or skin of a structure that protects what's inside. E.G. A bicycle helmet	<u>Key Learning</u> Bridges are structures built to help people cross over things like rivers, valleys, roads, or railways. They are like paths in the sky that allow us to get from one side to the other without having to go around. Bridges come in different shapes and sizes, and they can be made from different materials like metal, concrete, or even wood. Bridges are essential because they make traveling much easier. Just like how you use a ladder to climb over a fence instead of walking around it, bridges help us cross obstacles quickly and safely. They connect people and places, making it easier to visit friends, go to school or work, and explore new places. Types of Bridges 1. Beam bridges 2. Arch bridges 3. Truss bridges 4. Suspension bridges 	<u>Disciplinary Skills</u> • Generate ideas through brainstorming and identify a purpose for their product. • Draw up a specification for their design. • Select appropriate materials, tools and techniques. • Use skills in using different tools and equipment safely and accurately. • Evaluate a product against the original design specification. <table border="1" data-bbox="1258 587 2145 1308"> <thead> <tr> <th colspan="3"><u>Key Concepts</u></th></tr> </thead> <tbody> <tr> <td data-bbox="1258 644 1554 1308"> Design- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. </td><td data-bbox="1554 644 1850 1308"> Make- Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. </td><td data-bbox="1850 644 2145 1308"> Evaluate – Investigate and analyse a range of existing products. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Understand how key events and individuals in design and technology have helped shape the world. </td></tr> </tbody> </table>	<u>Key Concepts</u>			Design- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.	Make- Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.	Evaluate – Investigate and analyse a range of existing products. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Understand how key events and individuals in design and technology have helped shape the world.
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Key Vocabulary	
Beam bridge	Beam Bridges are the simplest type of bridge. They have horizontal beams supported by vertical columns.
Arch bridge	Arch Bridges have a curved design, like a rainbow lying on its side. This curve helps support the weight of the bridge and the things passing over it.
Suspension bridge	Suspension bridges have tall towers with cables stretching from one end to the other to hold the bridge up. The cables are like giant strings supporting a bridge made for cars to drive on or people to walk across.
Truss bridge	Truss bridges are a special type of bridge made up of interconnected triangles. These triangles are arranged to form a strong and stable structure that can support the weight of people, vehicles, and other things crossing over it.
Mark out	To measure and mark where a piece of material needs to be cut or shaped.
Reinforce	To make a structure or material stronger by adding another material e.g., a bridge can be made stronger using triangular bracing.



London Bridge- London, UK



Golden Gate- San Francisco, USA

Linking Thinking Across Our Learning Journey						
Early Years	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Once upon a time- Building structures	Playgrounds – Structures	Carnival hats - Structures	ROH Stage design – Structures	Light up signs- Constructing and designing	Bridges- Structures	African instruments/ Fairgrounds- Constructing