







Caroline Haslett Primary School - DT		
Topic: Construction and materials	Year 4 - Summer term	Super structures

Knowledge	Vocabulary
<ul style="list-style-type: none"> There are different types of bridge that we see today. <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <p>Beam Bridge This is the oldest and simplest of the four types of bridges. Simply a beam, placed across two points. Originally people used a long piece of stone or tree trunk to cross small streams.</p>  </div> <div style="width: 50%;"> <p>Cantilever Bridge A type of beam bridge, a cantilever bridge is made from beams supported on one side only. Usually two cantilevers with a short beam between them are used (think of your body as the central post, and your arms as the beams!).</p>  </div> <div style="width: 50%;"> <p>Suspension Bridge A suspension bridge (or hanging bridge) can stretch over long distances (think of a rope bridge in a jungle). To support heavy weights, strong steel cables are used to suspend roads.</p>  </div> <div style="width: 50%;"> <p>Arch Bridge This type of bridge was invented by the Romans. They realised that a wedge-shaped stone called 'voussoirs' could carry heavy loads if built in the shape of an arch.</p>  </div> </div> <ul style="list-style-type: none"> Isambard Kingdom Brunel, born in 1806, is considered one of the most influential people in engineering history.  <ul style="list-style-type: none"> Emily Roebling, born in New York in 1843, was a pioneer female in construction or engineering. 	<ul style="list-style-type: none"> Structure-a building or object constructed from several parts. Prototype-a practise version of a final product to help develop an idea. Reinforce-strengthens an object using additional materials. Bracket-an object used to strengthen and support a structure. Gusset-a type of bracket used to strengthen a corner or angle. Truss pattern-brackets organised in a triangle pattern to strengthen a structure.
Design, make, evaluate.	
<ol style="list-style-type: none"> Explore - describe the different types of bridge, and some historical structural achievements. Design a bridge to hold a significant weight and create a prototype. Consider how to strengthen, stiffen and reinforce. Make a final product. Evaluate - how much weight could the super structure hold? How could the product be made better, stronger or more sustainable? 	
Skills	
<ul style="list-style-type: none"> Researching different types of bridge and learning about significant engineers in history. Use research to design own bridge with the challenge to hold a heavy weight. Create and test a prototype. Use wood, hacksaws and glue guns to safely create a bridge, following careful health and safety information. Measure accurately to the nearest millimetre. Evaluate the product by testing to see if it can withstand a heavy weight being placed on top. 	

Skill	
Design	<p>Use research for design ideas.</p> <p>Show design meets a range of requirements and is fit for purpose.</p> <p>Begin to create their own design criteria.</p> <p>Have at least one idea about how to create a product and suggest improvements for design.</p> <p>Produce a plan and explain it to others.</p> <p>Say how realistic the plan is.</p> <p>Include an annotated sketch.</p> <p>Make and explain design decisions considering availability of resources.</p> <p>Explain how the product will work.</p> <p>Make a prototype.</p>
Make	<p>Select suitable tools and equipment, explain choices in relation to required techniques and use accurately.</p> <p>Select appropriate materials, fit for purpose; explain choices.</p> <p>Work through the plan in order.</p> <p>Realise if the product is going to be good quality.</p> <p>Measure, mark out, cut and shape materials/components with some accuracy.</p> <p>Assemble, join and combine materials and components with some accuracy.</p> <p>Apply a range of finishing techniques with some accuracy.</p>
Evaluate	<p>Refer to design criteria while designing and making.</p> <p>Use criteria to evaluate the product.</p> <p>Begin to explain how they could improve original design.</p> <p>Evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose.</p> <p>Discuss by whom, when and where products were designed.</p> <p>Research whether products can be recycled or reused.</p> <p>Know about some designers/engineers of products.</p>
Construction and materials	<p>Create and test a prototype.</p> <p>Use wood, hacksaws and glue guns.</p> <p>Measure accurately to the nearest millimetre.</p> <p>Begin to make strong structures using joining, rolling or folding.</p>