

Caroline Haslett Primary School - DT

Topic: Mechanics

Year 4

Super structures

Knowledge

- There are different types of bridge that we see today.

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.



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!)



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.



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



- Isambard Kingdom Brunel, born in 1806, is considered one of the most influential people in engineering history.



- Emily Roebling, born in New York in 1843, was a pioneer female in construction or engineering.



Vocabulary

- 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.

- 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

- 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 product by testing to see if it can withstand a heavy weight being placed on top.