

# Structures Project

## Project Brief

Design and construct a functioning structure : a bridge, working as a team.

## Project Context

Structures are present all around us. Some manufactured structures take inspiration from

natural structures. Structures like bridges are needed to help overcome obstacles such as rivers.

Lesson	Content	Completed?	
		Y / N	EFFORT
1	<ul style="list-style-type: none"> <li>Introduction to structures.</li> <li>Tower building contest</li> </ul> <p><i>Homework: Research at least three different bridge types</i></p> <p><i>Challenge: add the designer</i></p> <p><i>Further Challenge: Give real examples of each bridge type</i></p>		
2	<ul style="list-style-type: none"> <li>MIB homework on bridges.</li> <li>Introduction to forces</li> <li>Development of ideas</li> </ul>		
3	<ul style="list-style-type: none"> <li>Development of ideas &amp; final design</li> <li>Practical: making bridge</li> </ul> <p><i>Homework: research minimum of three bridge engineers</i></p> <p><i>Challenge: Include extra information about the engineer</i></p> <p><i>Further Challenge: make a model of their bridge</i></p>		
4	Practical bridge making		
5	Complete practical Testing & valuations <p><i>Homework: revision for assessment</i></p>		
6	End of Cycle Assessment: Baseline test		



Why are we learning how about structures?

You are learning about structures so that you:

- ◆ Have an understanding of the world around you
- ◆ Are able to develop your design concepts with understanding of structural elements and considerations

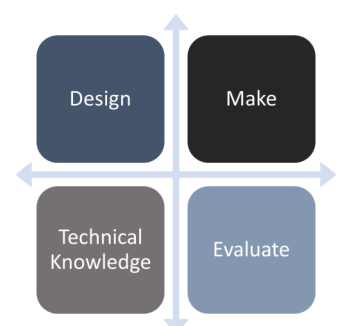
## Student Self Evaluation

WWW
EBI

## Challenge!

What areas of the four key concepts for Design & Technology have you worked in during this cycle?

Circle your response



## LEARNING TOOLS



Tick when you think you are able to define the meaning of the keyword

KEYWORDS	Structure	Natural structure	Man made structure	Scaled drawing
Rig	Shell structure	Frame structure	Engineer	Force
Tension	Torsion	Compression	Shear	Bending

**Challenge!** Can you add more keywords you have covered?



**Cycle 1 Structures Project: group task**

<b>My Expected Grade</b>				
<b>Teacher Assessed Grade (circle)</b>				
SBE	BE	E	AE	SAE
<b>Comment:</b>				

Grade	
8 - 9	<p>I can...</p> <p>Explain the difference between a natural and a man made structure and provide at least 3 or 4 examples of each</p> <p>Define what a structure is using appropriate language to include: load; weight; collapsing</p> <p>Explain, identify and examine a range of forces accurately</p> <p>Build a structure that clearly represents my knowledge of triangulation; forces and bridge types</p> <p>Produce a 3D drawing of bridge proposal accurately drawn to scale and as a result of effective research</p> <p>Annotate my ideas in detail; making links to materials; sizes and structural engineers</p> <p>Carry out research that is analysed and evaluated effectively in order to inform my design decisions</p>
6 –7	<p>I can...</p> <p>Explain the difference between a natural and a man made structure and give at least one example of each</p> <p>Define the term structure using a range of appropriate key words</p> <p>Explain and identify a range of different forces</p> <p>Make a weight bearing structure strong enough to hold the target weight, showing some understanding of triangulation</p> <p>Respond effectively to research and draw a bridge design in 3D evidencing knowledge and understanding of scale and proportion</p> <p>Use annotation skills in order to communicate ideas clearly.</p>
4 –5	<p>I can...</p> <p>Explain the difference between a natural and a man made structure</p> <p>Define the term structure</p> <p>Explain what a shell and a frame structure are</p> <p>Explain what a force is</p> <p>Respond to research and draw a suitable bridge design</p> <p>Use annotation skills by adding notes to explain my ideas</p> <p>Make a suitable and weight bearing structure to hold the minimum weight target</p> <p>Research within the topic and provide evidence of this</p>