UKS2 – Lesson Plan 3 – **Geography**

How can we design and build a bridge that is suited to the geographical features of its location?

Aim:	Key Words:	Preparation:
Children will explore different types of bridges, understand how location and environment affect design, and apply their knowledge to create a strong, functional model bridge adapted to a chosen geographical setting.	• Bridge, suspension, beam, arch, truss, load, tension, compression, span, stability, terrain, riverbank, floodplain, topography.	• Images of famous bridges from around the world • Short video explaining different bridge types and their strengths • Maps showing rivers, valleys, and urban landscapes • Building materials: cardboard, straws, string, masking tape, lollipop sticks, glue guns (supervised), paperclips • Small weights (coins, marbles) for load testing • Large paper for design sketches

Prior Learning: Children may have studied forces in science (tension, compression) and have an understanding of map skills, terrain, and landforms from geography lessons. They may also have done basic model construction in D.T.

WC / PT	<u>Warm-up:</u> Show images of three very different bridges (e.g., Tower Bridge in London, Millau Viaduct in France, Golden Gate Bridge in San Francisco). Ask: • What makes each bridge unique? • Why do you think they were built that way? Discuss how geography (river width, valley depth, city location) can affect the design and materials used.	0-5 mins
WC	<u>Main Teach:</u> Explain the main types of bridges (beam, arch, suspension, truss) and their strengths. Introduce the design challenge: children will select a geographical setting (e.g., wide river, mountainous valley, busy city) and design a bridge that would work best in that environment. Model an example by matching a suspension bridge to a deep valley and explaining why it's suitable.	5-10 mins

I / S	Activity: In groups, children: 1. **Choose a Setting** – from provided maps (urban, rural, mountainous, coastal). 2. **Plan a Design** – sketch a bridge suited to that location, labelling key features. 3. **Build the Model** – using provided materials, focusing on strength, stability, and suitability for the setting. 4. **Test the Bridge** – using small weights to see how much load it can hold before bending or collapsing.	10-30 mins
I	Extension Challenge: • Adapt your bridge to withstand extreme weather, such as high winds or floods. • Add an aesthetic design feature inspired by the culture or history of the location.	30-35 mins
WC	Plenary: Groups present their bridges, explaining the geographical setting and why their design fits that environment. Class discussion: • Which designs were strongest? • Which were most suited to their environment? • How does geography influence engineering decisions?	35-40 mins

WC – Whole Class PT – Partner Talk I – Independent S - Support

Challenge A	**Maths Link:** Measure and record bridge spans, calculate the ratio of span length to height, and create a data table.
Challenge B	**Art Link:** Draw a detailed artist's impression of the bridge set in its chosen location.