



DT Medium Term Plan

Year	1 and 2	Term:	Summer 1	Unit:	Structures: stability and flexibility
Big Question:	How can we make a structure strong enough to hold a toy car?				
Prior Substantive Knowledge	- I can explore different materials freely, in order to develop my ideas about how to use them and what to make. - Develop my own ideas and then decide which materials to use to express them. - Can create collaboratively, sharing ideas, resources and skills. -Can return to and build on my previous learning, refine my ideas and developing my ability to represent them. - Can share creations, talk about process and evaluate my work.	Cross-curricular	Maths- measuring		
		Key Vocab	Triangles- provide strength and stability Squares- can collapse without reinforcement Arches- distribute weight		
		Essential vocab	Strength- a structures ability to hold weight and resist force Flexibility- how much a material can bend stretch without breaking Stability- A structures ability to stay upright without tipping over.		
Substantive Knowledge:					Disciplinary Knowledge (Think like)
Declarative Knowledge (Know what)		Procedural Knowledge (Know how)			- Mark out materials to be cut using a template.
- Explore how to make structures stronger. - Investigate different techniques for stiffening a variety of materials. - Test different methods of enabling structures to remain stable		- Explore existing products and investigate how they have been made. - Decide how existing products do/do not achieve their purpose. - Talk about their design as they develop and identify good and bad points. - Use pictures and words to convey what they want to design/make. - Propose more than one idea for their product. - Select appropriate technique explaining: First... Next... Last.... - Explore ideas by rearranging materials. - Select pictures to help develop ideas. - Use drawings to record ideas as they are developed. - Add notes to drawings to help explanations. - Describe their models and drawings of ideas and intentions. - Discuss their work as it progresses. - Select materials from a limited range that will meet the design criteria. - Explain what they are making. - Explain which materials they are using and why. - Join appropriately for different materials and situations e.g. glue, tape. - Note changes made during the making process as annotation to plans/drawings. - Say what they like and do not like about items they have made and attempt to say why.			



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Teacher Knowledge	Key concepts include strength, flexibility, and stability, as well as an understanding of how structural shapes—such as triangles, arches, and squares—impact the stability and load-bearing capacity of constructions. Common materials used in the classroom, including paper, card, straws, and lollipop sticks, each have specific properties that affect strength and flexibility, and joining methods such as tape and glue influence the durability of the final structure. Simple engineering principles apply, including the importance of distributing weight evenly, reinforcing joints, and using bracing techniques to add strength. At KS1, children benefit from scaffolded support through clear modelling of the design process, step-by-step planning, and the opportunity to revise their work through testing and improvement. Safe use of basic tools such as scissors, glue, and masking tape is essential, with close supervision during practical activities. Assessment focuses on children's ability to engage in the investigation, communicate their ideas clearly through drawings and models, make purposeful construction choices, and reflect on outcomes during the evaluation phase. The use of questioning and discussion promotes STEM thinking and encourages pupils to approach problems creatively and systematically.			FRUITS	Faith- Encouraging children to persevere and believe in their ideas, even if their first design doesn't work. Respect- Valuing and listening to the ideas of others during peer feedback and collaborative tasks. Uniqueness – Celebrating the diverse ways children approach problem solving and construction.
Key concept	Learning objective	Key components	Main input	Activity	Adaptive strategies
Investigate	What Makes Structures Strong?	• I can test different materials to see which is strongest. • I can explore shapes that make structures stronger. • I can talk about which materials and shapes work best.	Introduction: Show photos of real-life structures. Ask questions to spark curiosity. Demonstrate a basic structure using flat and folded paper. Main Activity: Children rotate through stations to test materials, shapes, and joining methods. Encourage discussion and recording of observations. Which structure held the most coins? Which joining method was most efficient? How could we improve each? Plenary: Discuss findings as a class. Record key discoveries on a class chart. Resources Needed: Paper, card, straws, tape, coins, pictures of structures.	Children to complete each station and record their findings on their group chart.	Adult support available Some pre cut resources Photographs for real life references.
Design	How can I plan a strong and flexible structure?	I can design a structure with strong shapes.	Introduction: Recap findings from investigation. Introduce a simple design brief to build a bridge:	Children use their investigations to design a	Adult support available



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		• I can choose suitable materials. • I can label my design	The bridge has fallen down to our campsite. Can you help us to build a bridge that can hold our car? Main Activity: Children sketch their designs, label materials and shapes, and explain how they will join materials. Plenary: Peer share and feedback. Use positive praise and constructive comments. Resources Needed: Design templates, pencils, rulers, structure images.	strong structure in line with the brief.	Photographs of real life for reference Photograohs of children's previous explorations Scribe available if needed.
Make	How can I construct my structure?	• I can use tools and materials safely. • I can follow my design plan. • I can build a strong and stable structure.	Introduction: Discuss safety and recap plans. Emphasize testing and adapting as they go. Main Activity: Children construct their bridges following their design plans. Adults support where needed. Plenary: Gallery walk to view each other's work. Discuss which look stable and why. Resources Needed: Card, paper, tape, glue, scissors, toy cars, coins	Children to build their structure following their plan.	Adult support available Some pre cut resources Photographs for real life references.
Evaluate	How can I improve my structure?	• I can test my structure to see how strong it is. • I can say what I like about my structure. • I can say how I could improve it.	Introduction: Explain how engineers always test and improve. Model testing process. Main Activity: Children test their structures with weights or toy cars. Complete evaluation sheets and make small improvements. Plenary: Share evaluations and improvements. Reflect on learning across the project. Resources Needed: Evaluation sheets, pencils, test weights, toy cars.	Children to test and evaluate their bridges and decide on improvements they could make.	Photographs of real life for reference Photograohs of children's previous explorations Scribe available if needed.