

MTP – DT – Year 4

Topic	Digital world: Structures: Helmets
N.C Learning Objectives	Pupils should be taught: When designing and making, pupils should be taught to: Design - Creating simple design criteria that outline basic functionality and - appeal to individual users or target audiences. - Noticing simple problems or needs in everyday life. - Developing drawing and sketching skills with a focus on clarity and simplicity Make - Selecting materials, components or ingredients based on their form as well as their functional properties. - Explaining choices with regard to function and form. - Choosing shapes to suit the function of a product Evaluate - Evaluating designs by comparing them against design criteria. - Considering feedback from peers to suggest improvements. - Evaluating how effective the chosen materials were in fulfilling the design brief. Technical knowledge - Strengthening structures by layering materials (lamination). - Strengthening structures by ribbing. - To know how some different structures are built. - To know that structures can be strengthened by manipulating materials - and shapes. - To know a shell structure is a hollow shape with a thin outer layer.
Ways of being Co-Op	Do what matters most Succeed together Be yourself, always Show you care

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British Values	Democracy Rule of Law Individual Liberty Mutual Respect Tolerance				
CRL	Product Designer Materials Engineer Industrial Designer Safety Equipment Designer Mechanical Engineer				
Vocabulary	<u>Analyse</u> Study something closely and carefully to understand it better. analyse	<u>Corrugation</u> Shaping a material into waves or folds to make it stronger	<u>Hollow</u> Something that is empty inside.	<u>Shell Structure</u> A hollow shape with a thin outer layer	<u>Three Dimensional</u> An object that is not flat; something that can be held and seen from all sides.
Recap and Recall	-				
	LEARNING OBJECTIVE	STICKY KNOWLEDGE FACT	CORE LEARNING		
Lesson 1	We are learning to explore shell structures and design our own.	Shell structures have a solid, often curved outer surface and empty space inside, which makes it very strong while still being lightweight	- Children can describe what a shell structure is. - Children can describe what makes an effective helmet. - Children can design a helmet for a specific user by choosing appropriate features.		
Lesson 2	We are learning to make the shell of a helmet.	Fibreglass is a strong, lightweight material made by setting glass fibres in glue-like resin to make a hard shell.	- Children can explain that layering techniques are used to strengthen shell structures. - Children can use layering techniques to make a helmet. - Children can reflect on the process of making a helmet.		

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Lesson 3	We are learning to assess how a helmet structure needs to be strengthened.	Layering makes something stronger because it adds thickness and support.	• Children can evaluate where their helmet needs to be strengthened. • Children can choose appropriate strengthening techniques. • Children can explain why their helmet needs to be strengthened in the chosen way.
Lesson 4	We are learning to strengthen a helmet structure.	Strengthening techniques make materials stronger and stiffer; for example, corrugated cardboard is strong because of its wavy middle layer.	• Children can follow their plan to strengthen their helmet. • Children can use appropriate techniques to strengthen and stiffen their helmet • Children can communicate with peers when making improvements to their helmet.
Lesson 5	We are learning to evaluate the effectiveness of strengthening a helmet.	Evaluation is the process of judging the quality, value, or success of a product, by deciding if it met its goal and identifying how to improve it	• Children can analyse the strength of their helmet and other groups' helmets. • Children can evaluate how well their helmet works for its purpose. • Children can suggest how to improve their helmet based on testing and feedback.
Outcome	Explain that the children have completed the process of designing, making and evaluating a helmet shell structure.		