Year 3: Structures-Shell Structures

Topic Overview – Lesson Objectives

Lesson 1	Investigate different shell structures, including packaging. Answer questions such as 'What is the purpose of the shell structure?' Take a small package apart and identify parts of a net. Evaluate existing products and decide which designs are the most effective, thinking about intender, user and purpose. Discuss graphics such as the logo.
Lesson 2	Using Microsoft word, practise drawing different shapes such as rectangles, circles, trapezoids. Draw a net. Make a box from a net and cut out a window. Use tape to fasten together.
Lesson 3	**Design** your product thinking about the needs of the user and the functional and aesthetic purposes of the product. Discuss the uses and purpose of the shell structure. Create a net using computer software and print off. **LINKS TO LOCAL AREA:** The design of the shell structure will mimic those found on the beach. Encourage children to use spirals and show pictures of the art installation at Cleveleys for inspiration.
Lesson 4	**Make** product using appropriate tools and software to measure, mark out, cut, score, shape and assemble with some accuracy.
Lesson 5	Complete the product using computer-generated finishing techniques (such as writing a logo) and suitable finishing materials.
Lesson 6	**Evaluate** your product by discussing how well it works in relation to the purpose and user and design criteria. Think about how effective the materials, components and techniques that have been used are.

Assessment – National Curriculum

NC Statement	Maths/Literacy opportunity	Child led enquiry
Design *Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. *Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. **Make** *Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. *Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. **Evaluate** *Investigate and analyse a range of existing products	Compare and sort common 2-D and 3-D shapes in everyday objects. Recognise 3-D shapes in different orientations and describe them. Use a ruler to measure to the nearest cm, half cm or mm. Draw 2-D shapes and make 3-D objects using modelling materials. Write for real purposes and audiences. Spoken language-Ask relevant questions to extend your knowledge and understanding. Build your technical knowledge.	How can you make your box stronger?

*Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
*Understand how key events and individuals in design and technology have helped shape the world.

Technical knowledge
*Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
*Apply their understanding of computing to program, monitor and control their products.

Topic Vocabulary	shell structure, three-dimensional (3-D), shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief, design criteria, innovative, prototype