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| **Year:** 3 **Program of Study:** Structures – Shell Structures**N.C POS:*** *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 and prototypes.*
* *Select from tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately.*
* *Investigate and analyse a range of existing products.*
* *Evaluate their ideas and products against their own design criteria.*
* *Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.*

**Concept:** technology, impact, legacy, change, inventions, innovation, application, cause and effect.**Key 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.**Prior Learning:** Experience of using different joining, cutting and finishing techniques with paper and card. A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.  |
| **Core Knowledge- non-negotiable****Explore*** Children investigate a collection of different shell structures including packaging. Use questions to develop children’s understanding e.g. What is the purpose of the shell structure – protecting, containing, presenting? What material is it made from? How has it been constructed? Are the materials recyclable or reusable? How has it been stiffened i.e. folded, corrugated, ribbed, laminated? What size/shape/colour is it? What information does it show and why? How attractive is the design?

**Designing*** Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product.
* Develop ideas through the analysis of existing products and use annotated sketches ad prototypes to model and communicate ideas.

**Making*** Order the main stages of making.
* Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy.
* Explain their choice of materials according to functional properties and aesthetic qualities.
* Use finishing techniques suitable for the product they are creating.

**Evaluating*** Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used.
* Test and evaluate their own products against design criteria and the intended user and purpose.
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| **Wider Influences*** Shapes and space
* Going green
* Festivals
* Celebrations
* Healthy eating
* Our school
* Toy and games
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| **Enduring Understanding*** Develop and use knowledge of how to construct strong, stiff shell structures.
* Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes.
* Know and use technical vocabulary relevant to the project.
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