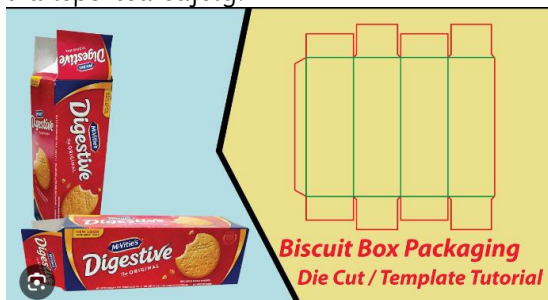




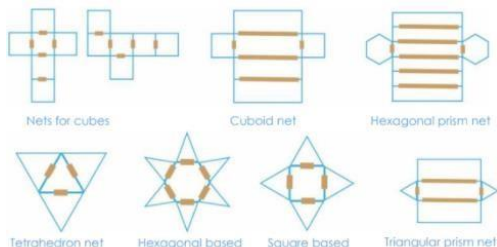
Project objective

Design, make and evaluate a shell structure packaging (product) for biscuit maker (user) to ensure biscuits are transported safely.

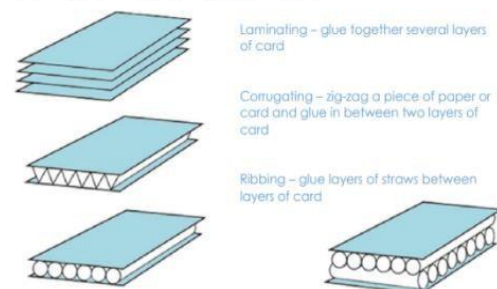


Techniques

Nets



Stiffening and strengthening sheet materials:



Design and Technology Knowledge Organiser

Year 3– shell structures- Biscuit packaging

Vocabulary

investigate	To look carefully and closely to learn the facts through examining.
strengthen	To make stronger.
finish	Finishing touches added to a product's surface to improve its functionality.
adapt	To change or adjust for a particular use.
three-dimensional (3d)	Appearing in three dimensions; having depth as well as height and width.
adhesive	A sticky substance or a <u>material</u> such as glue.
net	A flat shape which can be folded up into a three-dimensional solid.
score/scoring	Cutting a line or mark into sheet material to make it easier to fold.
stiffen /stiffened	How the material is supported so that it is sturdy.
shell structure	Has a hollow, curved shape which are strong and rigid.

Technical Knowledge and 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.

Focused skills

- Use kit parts with flat faces to construct nets. Practise making nets out of card, joining flat faces with masking tape to create 3-D shapes. Experiment with assembling in nets in numerous ways.
 - Demonstrate skills and techniques of scoring, cutting out and assembling using pre-drawn nets.
 - Demonstrate how to use different ways of stiffening and strengthening their shell structures e.g. folding and shaping, corrugating, ribbing, laminating.
 - Children discuss and explore the graphics techniques and media that could be used to achieve the desired appearance of their products.
- Practise using computer-aided design (CAD) software to design the net, text and graphics for their products according to purposes.

Key Learning

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.

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 and 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.