

Project Title: Design, make and evaluate a gift box for their family which will hold a sweet treat.

Length of unit – 2 afternoon sessions and 1 deep learning day

	Disciplinary and Substantive Knowledge	Vocabulary	Learning Sequence
Pre-learning	• Know different joining, cutting and finishing techniques with paper and card. • Know properties of some 2-D and 3-D shapes in mathematics. (cube, cuboid) • Know some physical properties and everyday uses of materials in science. • Know how to use software to draw accurate shapes, such as Microsoft Word.	• shell structure • packaging • 3D shape • Net • Cube • Cuboid • Face • Laminate • CAD	<u>Technical Knowledge</u> • Investigate a collection of packaging. Discuss graphics including colours/impact of style/logo/size of font. Use questions to develop understanding e.g What material is it made from? How has it been made? What size/shape/colour is it? What information does it show and why? How attractive is the design? What do you prefer and why? • Take a small package apart, identifying and discussing parts of a net including the tabs - How are different faces of the package arranged? How are the tabs used to join the ‘free’ edges of the net? • 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. Then allow children to practise by constructing a simple box. • Demonstrate simple drawing software such as Google Draw. Ask children to explore the interface and drawing tools to practise drawing and manipulating text and graphics. • Use the software to open existing nets. Let the children explore and be guided to try out different fill and font tools to become familiar with the graphic design aspects of the available software to achieve the desired appearance of their products.
Learning in this unit	To know that: <u>Technical Knowledge</u> • Cubes and cuboids can be made by folding a net. To know how to: <u>Technical Knowledge</u> • Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. • Develop and construct strong, stiff shell structures. <u>Designing</u> • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. • Use annotated sketches to develop and communicate ideas. <u>Making</u> • Order the main stages of making. • Select from and use appropriate tools to cut, shape and join materials with some accuracy. • Select from and use finishing techniques suitable for the product they are creating. <u>Evaluating</u> • Evaluate their own products and ideas against criteria and user needs, as they design and make.		<u>Designing</u> • Discuss with the children the uses and purposes of their shell structures e.g. What does the product need to do? Who is it aimed at? How will the purpose and user affect your design decisions? • Children discuss and explore the graphics techniques and media that could be used to achieve the desired appearance of their products. • As a class. agree on design criteria that can be used to guide the development and evaluation of the children’s products. • Demonstrate how to use different ways of stiffening and strengthening their shell structures - folding, shaping and laminating. Provide opportunities for the children to practise these and find out where their structures might need to be strengthened or stiffened. • Use Google Draw to design the net, text and graphics for their products. <u>Making and Evaluating</u> • Ask the children to consider the main stages in making, and then collaboratively put these stages in the correct order. • Print out nets from last week. Annotate to develop, model and communicate their ideas for the product - what will you need to include in your design? How can you improve it? What materials will you use? How will you make sure your product works well and has the right appearance? • Children create their final product and print onto card. Children cut out net, score fold lines using a ruler and glue tabs using a glue gun. Encourage the children to work with accuracy. • Evaluate throughout and the final products against the intended purpose and with the intended user if possible, drawing on the design criteria previously agreed.
Resources	• Collection of shell structures for different purposes and users • Card, masking tape, glue guns, rulers, right/left handed scissors • Computer with computer-aided design (CAD) software such as Google Draw, printer		

Project Title: Design, make and evaluate a moving poster for the school community to persuade them to do something.

Length of unit – 2 afternoon sessions and 1 deep learning day

	Disciplinary and Substantive Knowledge	Vocabulary	Learning Sequence
Pre-learning	- How to use mechanisms such as sliders and levers. - Experience of basic cutting, joining and finishing techniques with paper and card.	- Mechanism - Lever - Linkage - Slot - Guide - Bridge - Loose pivot - Fixed pivot - Input - Output - Oscillating - Reciprocating - Evaluation	<u>Technical Knowledge</u> - Explore existing products that use levers and linkages, for example: lamp with moveable arm, scissors, bike brakes. Use questions to develop children's understanding e.g. Who might it be for? What is its purpose? What do you think will move? How will you make it move? What part moved and how did it move? How do you think the mechanism works? What materials have been used? How effective do you think it is and why? What else could move? - Demonstrate a range of lever and linkage mechanisms to the children using prepared teaching aids. These should be made of card strips, a card backboard and split pins. Use questions to develop children's understanding e.g. Which card strip is the lever? Which card strip is acting as the linkage? Which are the fixed pivots and which are the loose pivots? - Children to consider where the slot, guide and bridge are and why these are required. - Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques. Children should develop their knowledge and skills by replicating one or more of the teaching aids. Consider how they move, the direction of movement, where the fixed and loose pivots are and the input and output
Learning in this unit	To know that: <u>Technical Knowledge</u> - Fixed and loose pivots have different purposes. To know how to: <u>Technical Knowledge</u> - Investigate and analyse products with lever and linkage mechanisms. - Make, explore and use lever and linkage mechanisms. <u>Designing</u> - Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. - Use annotated sketches to develop and communicate ideas. <u>Making</u> - Order the main stages of making. - Select from and use appropriate tools to cut, shape and join materials with some accuracy. - Select from and use finishing techniques suitable for the product they are creating. <u>Evaluating</u> - Evaluate their own products and ideas against criteria and user needs, as they design and make.		<u>Designing</u> - Explain that children will be creating a persuasive poster. - Discuss the meaning of the word persuasive and give examples of persuasive devices. - Ask the children to generate a range of ideas for their persuasive posters, encouraging creative responses. - As a class, agree on design criteria that can be used to guide the development and evaluation of the children's products. - Children work in groups to create an annotated sketch to design their poster, identifying the colours, moving parts and types of movement. <u>Making and Evaluating</u> - Ask the children to consider the main stages in making, and then collaboratively put these stages in the correct order. - Give children free access to card and split pins for them to measure, cut out and assemble their own levers, pivots and mechanisms. - With adult guidance and support, cut out slots to move their mechanisms to the front of their posters. - Children to finish their posters with coloured pencils or felt tip pens. Encourage children to hide any split pins by designing additional parts out of card and covering the split pin – however, make sure that this doesn't resist movement. - Evaluate throughout and the final products against the intended purpose and with the intended user if possible, drawing on the design criteria previously agreed.
Resources	- books and other products with lever and linkage mechanisms - lever and linkage teaching aids - card strips, card rectangles, paper, masking tape, paper fasteners, paper binders, stick glue - left/right handed scissors, cutting mats, finishing media and materials		

Project Title: Design, make and evaluate a money container for a relative to use as a purse or wallet.

Length of unit – 2 afternoon sessions and 1 deep learning day

	Disciplinary and Substantive Knowledge	Vocabulary	Learning Sequence
Pre-learning	- Have joined fabric in simple ways by gluing and stitching. - Have used simple templates for marking out. - Have evaluated a range of textile products.	- Fabric - Fastening - Compartment - Button - Templates - Stitch - Seam - Textiles, - template, - seam allowance	<u>Technical Knowledge</u> - Children investigate a range of money containers that have a selection of stitches, joins, fabrics, finishing techniques, fastenings and purposes. Use questioning to develop understanding e.g. What is its purpose? Which one is most suited to its purpose? What properties/characteristics does the fabric have? Why has this fabric been chosen? How has the fabric been joined together? How effective are its fastenings? How has it been decorated? Does its decoration have a purpose? - Look at seam allowance and discuss why this is important. - Consider the user, purpose and appeal of each of the products, can you tell which ones have been designed for a child or an adult? Do they have any clear differences which show their intended user or purpose? - Recap running stitch taught in Y1 and use this to join two pieces of fabric together. Use metal embroidery needles and felt. Teach children how to develop their running stitch into backstitch, and again sew two pieces of fabric together. - Demonstrate a range of stitching techniques and allow children to practise sewing two small pieces of fabric together, demonstrating the use of, and need for, seam allowances. Use questioning to develop understanding e.g. Which joining technique makes the strongest seam? Why? Which stitch is appropriate for the purpose
Learning in this unit	To know that: <u>Technical Knowledge</u> - Textile products need a seam allowance. To know how to: <u>Technical Knowledge</u> - Securely join two pieces of fabric together. <u>Designing</u> - Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. - Use annotated sketches to develop and communicate ideas. <u>Making</u> - Order the main stages of making. - Select from and use appropriate tools to cut, shape and join materials with some accuracy. - Select from and use finishing techniques suitable for the product they are creating. <u>Evaluating</u> - Evaluate their own products and ideas against criteria and user needs, as they design and make.		<u>Designing</u> - Disassemble appropriate textiles products to gain an understanding of how a 2D pattern piece can be assembled to form a 3-D product. Link back to nets in Structures topic. - Explain to children that they will be creating a money container for a family member – ask children to name that family member and discuss their likes and dislikes. - Agree on design criteria that can be used to guide the development and evaluation of the children's products. - Children use an annotated sketch to design their money container, identifying the colours, stitch (running or back), fastening (button) and finishing (fabric paint or craft materials). <u>Making and Evaluating</u> - Ask the children to consider the main stages in making, and then collaboratively put these stages in the correct order. - Children use a pattern piece to draw around and cut out a 2D template onto a piece of felt. - Children stitch up the left and right side of their money container using their preferred stitch. - Children then attach their fastening – either sewing on a button, gluing on a press stud or using velcro tape. - Children should then add pattern and design using a range of different finishing materials – fabric paint, sequins, buttons, ribbon, etc. Use glue guns, tacky PVA glue or fabric glue to attach. - Evaluate throughout and the final products against the intended purpose and with the intended user if possible, drawing on the design criteria previously agreed.
Resources	- collection of textile products linked to the chosen product to be made - selection of fabrics and fastenings - left/right handed scissors, needles, thread, tape, fabric glue, pins, measuring tape - items to use for finishing e.g. fabric paints, threads, appliqué pieces, paints for printing, thin paint brushes		