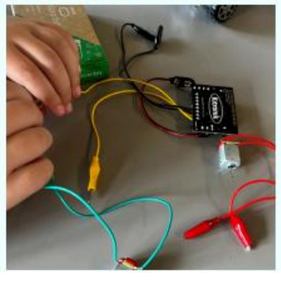
Charles Darwin Community Primary School Progression in Design Technology
Year 4

Term **Topic**	**Autumn** **Design, make and evaluate a bread based snack for lunch to be healthy**	**Spring** **Design, make and evaluate a night light for yourself to help you see in the dark**	**Summer** **Design, make and evaluate a purse for your mum for holding her change**
Themes	Food - Healthy and varied diet	Electrical - Simple circuits and switches	Textiles - 2D shape to 3D product
Prior knowledge	From Y1 and 2 healthy sncks	Science electricity unit	From Y3 making a pencil case From Y2 puppets
Prior skills	Know some ways to prepare ingredients safely and hygienically. • Have some basic knowledge and understanding about healthy eating and The Eatwell Guide. • Have used some equipment and utensils and prepared and combined ingredients to make a product	Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers. • Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.	Have joined fabric in simple ways by gluing and stitching. • Have used simple patterns and templates for marking out. • Have evaluated a range of textile products
Key vocabulary	• name of products, names of equipment, utensils, techniques and ingredients • texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury • hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet • planning, design criteria, purpose, user, annotated sketch, sensory evaluations	• series circuit, fault, connection, toggle switch, pushto-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip • control, program, system, input device, output device • user, purpose, function, prototype, design criteria, innovative, appealing, design brief	fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance • user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces
NC Statutory Requirements	**Key stage 2** Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to: **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 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 understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products.		
Technical knowledge and understanding	**Investigating and Evaluating Activities** Children can analyse existing products related to their project using sensory evaluations and record their results in a table. Explain that tasting is not the same as eating. Provide kitchen towel so children can spit out food they do not like. Provide water to cleanse palette between tasting products.	**Microcontrollers**  When children are familiar with using electrical circuits they should be introduced to microcontrollers. Products such as a micro:bit has in-built inputs and outputs and children can program them to follow instructions and create interesting and useful effects in their products.	To move children's learning on, as enhancement activities, children could research into different types of fabrics and how they are constructed. They could carry out tests to check e.g. strength, waterproofness or flexibility to ensure their chosen fabric can be used to create a product that meets the needs of user and is fit for purpose.

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<td>Techniques</td>
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Grating cheese

Spreading butter on bread

Cutting using the bridge technique

Cutting using the claw technique
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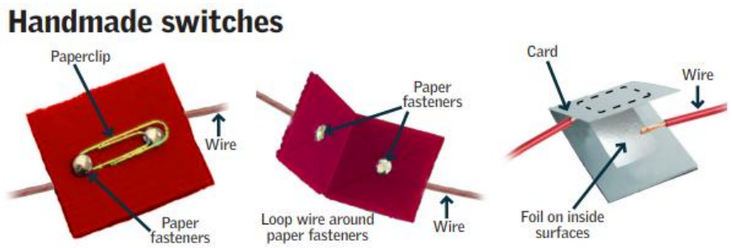

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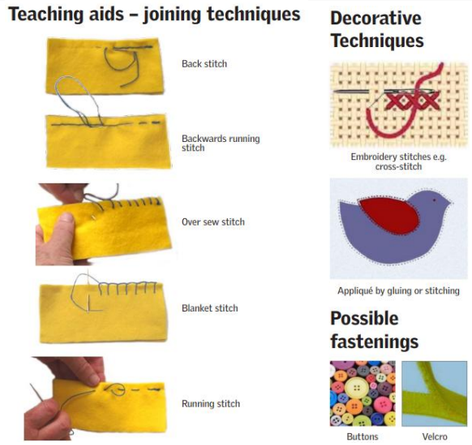

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<td>KPIs</td>
<td>Designing
• Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.
• Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.</td>
<td>Designing
• Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.
• Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, crosssectional and exploded diagrams.</td>
<td>Designing
• Generate realistic ideas through discussion and design criteria for an appealing,
functional product fit for purpose and specific user/s.
• Produce annotated sketches, prototypes, final product sketches and pattern pieces.</td>
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<td>Making
• Plan the main stages of a recipe, listing ingredients, utensils and equipment.
• Select and use appropriate utensils and equipment to prepare and combine ingredients.
• Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.</td>
<td>Making
• Order the main stages of making.
• Select from and use tools and equipment to cut, shape, join and finish with some accuracy.
• Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.</td>
<td>Making
• Plan the main stages of making.
• Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing.
• Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.</td>
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<td>Evaluating
• Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.
• Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.</td>
<td>Evaluating
• Investigate and analyse a range of existing battery-powered products.
• Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.</td>
<td>Evaluating
• Investigate a range of 3-D textile products relevant to the project.
• Test their product against the original design criteria and with the intended user.
• Take into account others' views.
• Understand how a key event/individual has influenced the development of the chosen product and/or fabric.</td>
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<td>Technical knowledge and understanding
• Know how to use appropriate equipment and utensils to prepare and combine food.
• Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.
• Know and use relevant technical and sensory vocabulary appropriately</td>
<td>Technical knowledge and understanding
• Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.
• Apply their understanding of computing to program and control their products.
• Know and use technical vocabulary relevant to the project.</td>
<td>Technical knowledge and understanding
• Know how to strengthen, stiffen and reinforce existing fabrics.
• Understand how to securely join two pieces of fabric together.
• Understand the need for patterns and seam allowances.
• Know and use technical vocabulary relevant to the project</td>
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<td>Links to other subjects</td>
<td>Mathematics and computing – making use of mathematical and computing skills to present results of sensory evaluations graphically.
Spoken language – developing relevant vocabulary e.g. sensory descriptors. Ask relevant questions to extend their knowledge.
Science – using and developing skills of observing and questioning. Humans get nutrition from what they eat. Discuss changes of state if heat is used
Art and Design – using and developing drawing skills.
Writing – new vocabulary. Use non-fiction texts such as description, explanation and instructions e.g. recipes.</td>
<td>Science – know how to construct simple series circuits and have a basic understanding of conductors, insulators and open and closed switches.
Spoken language – participate in discussion and evaluation of battery-powered products. Ask relevant questions to extend knowledge and understanding. Build their technical vocabulary.
Computing – design, write and debug programs that accomplish specific goals, including controlling physical systems.</td>
<td>Science – physical properties of fabrics.
Spoken language – asking and answering questions to develop understanding. Through discussion, participate actively initiating and responding to comments.
Mathematics – nets of shapes and accurate measurements mm/cm.
History – investigating textiles and textile products from age being studied.
Art and design – investigating visual and tactile qualities of fabrics and using colour and pattern appropriately</td>
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			Computing – opportunity to create pattern pieces using a computer program.
Lessons	**Investigative and Evaluative Activities (IEAs)** Children investigate a range of food products e.g. the content of their lunchboxes over a week, a selection of foods provided for them, food from a visit to a local shop. Link to the principles of a varied and healthy diet using The Eatwell Guide • Carry out sensory evaluations on the contents of the food from e.g. a variety of bought food products such as a range of wraps or sandwiches. Record results, for example using a table. Use appropriate words to describe the taste/smell/texture/appearance • Gather information about existing products available relating to your product. Visit a local supermarket and/or use the internet. • Find out how a variety of ingredients used in products are grown and harvested, reared, caught and processed	**Investigative and Evaluative Activities (IEAs)** Discuss, investigate and, where practical, disassemble different examples of relevant battery-powered products, including those which are commercially available • Ask children to investigate examples of switches, including those which are commercially available, which work in different ways e.g. push-to-make, push-to-break, toggle switch. Let the children use them in simple circuits • Remind children about the dangers of mains electricity.	**Investigative and Evaluative Activities (IEAs)** Children investigate a range of textile products that have a selection of stitches, joins, fabrics, finishing techniques, fastenings and purposes, linked to the product they will design, make and evaluate. Think about products from the past and what changes have been made in textile production and products e.g. the invention of zips and Velcro. • Give children the opportunity to disassemble appropriate textiles products to gain an understanding of 3-D shape, patterns and seam allowances. • Use questioning to develop understanding
	Focused Tasks (FTs) Learn to select and use a range of utensils and use a range of techniques as appropriate to prepare ingredients hygienically including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking. • Food preparation and cooking techniques could be practised by making a food product using an existing recipe. • Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk	Focused Tasks (FTs) Recap with the children how to make manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers. Discuss which of the components in the circuit are input devices e.g. switches, and which are output devices e.g. bulbs and buzzers. • Demonstrate how to find a fault in a simple circuit and correct it, giving pupils opportunities to practise. • Use a simple microcontroller program with an interface box or standalone control box to physically control output devices e.g. bulbs and buzzers. • Ask the children to make a variety of switches by using simple classroom materials e.g. card, corrugated plastic, aluminium foil, paper fasteners and paper clips. Encourage children to make switches that operate in different ways e.g. when you press them, when you turn them, when you push them from side to side. Ask the children to test their switches in a simple series circuit. • Teach children how to avoid making short circuits.	**Focused Tasks (FTs)** 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. • Allow children to use a textile product they have taken apart to create a paper pattern using 2-D shapes. • Provide a range of fabrics – children to consider whether fabrics are suitable for the chosen purpose and user. The fabrics also can be used for demonstrating and testing out a range of decorative finishing techniques e.g. appliqué, embroidery, fabric pens/paints, printing. • Use questioning to develop understanding
	Design, Make and Evaluate Assignment (DMEA) Discuss the purpose of the products that the children will be designing, making and evaluating and who the products will be for. • Develop and agree on design criteria with the children within a context that is authentic and meaningful. This can include criteria relating to healthy eating and a varied diet • Ask children to generate a range of ideas encouraging realistic responses. • Using discussion, annotated sketches and information and communication technology if appropriate, ask the children to develop and communicate their ideas. • Ask children to consider the main stages in making the food product, before preparing/cooking the product including the ingredients and utensils they will need. • Evaluate as the assignment proceeds and the final product against the intended purpose and user, reflecting on the design criteria previously agreed. Consider what others think of the product when considering how the work might be improved.	**Design, Make and Evaluate Assignment (DMEA)** • Develop a design brief with the children within a context which is authentic and meaningful. • Discuss with children the purpose of the battery-powered products that they will be designing and making and who they will be for. Ask the children to generate a range of ideas, encouraging realistic responses. Agree on design criteria that can be used to guide the development and evaluation of the children's products, including safety features. • Using annotated sketches, cross-sectional and exploded diagrams, as appropriate, ask the children to develop, model and communicate their ideas. • Ask the children to consider the main stages in making and testing before assembling high quality products, drawing on the knowledge, understanding and skills learnt through IEAs and FTs. • Evaluate throughout and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed	**Design, Make and Evaluate Assignment (DMEA)** Children to create a design brief, supported by the teacher, set within a context which is authentic and meaningful. Discuss the intended user, purpose and appeal of their product. Create a set of design criteria. • Ask children to sketch and annotate a range of possible ideas, constantly encouraging creative thinking. Produce mock-ups and prototypes of their chosen product. • Plan the main stages of making e.g. using a flowchart or storyboard. • Children to assemble their product using their existing knowledge, skills and understanding from IEAs and FTs. Encourage children to think about the aesthetics and quality finish of their product. • Evaluate as the process is undertaken and the final product in relation to the design brief and criteria. The product should be tested by the intended user and for its purpose and others' views sought to help with identifying possible improvements
Assessment questions	What did you already know about healthy food before you started? How did you research which food to use? How did you decide on your ingredients How did you know the order you needed to do things? Which technoques did you use? Did you have any problems? What was the best thing about the sandwich?	Did your work in Science help with this project? How? How did you know what you needed when you designed your product? Did you have to change your design in any way? What was the easiest part of making the product? Did you need any help with anything? Were some bits easier than others? Did the end product look how you intended it to? Did it work? How could you tell?	What was the purpose of making the purse? How did you decide on the fastening? Which fabric did you use? Why? How did you test the product? Did it work? Did you need to improve anything? Did your mum like the purse? Does she use it?
