YEAR: 4 **TERM: Autumn 2** **TITLE: To design, make and evaluate a stew (Food: Healthy and Varied Diet)**

REVISION / REMIND / REVISIT

Know some ways to prepare ingredients safely and hygienically. Have some basic knowledge and understanding about healthy eating and The Eatwell plate. Have used some equipment and utensils and prepared and combined ingredients to make a product.

COHERENCE

THE BIG QUESTION

My school lunch v a Celtic Tribe lunch – which is better?

LINKS to NC/rationale:

Design

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 to develop and communicate ideas

Make

Plan the stages of a recipe, listing ingredients, utensils, and equipment

CREDIBILITY

Knowledge Acquired Investigative and Evaluative Activities:

Investigate a range of food products – contents of lunchboxes/selection of foods provided/food from a visit to a local shop. Link to principles of a varies and healthy diet using The Eatwell Plate – What ingredients have been used? Which food groups do they belong to? What substances are used in the products – nutrients, water, fibre

Carry out sensory evaluations using a variety of bought food products. Record results eg using a table. Describe taste, texture, smell, appearance

Gather information about existing products available

Find out how a variety of ingredients are grown and harvested, reared, caught, and processed – Where and when are the ingredients grown? Where do different

CREATIVITY

A variety of contributions to a classroom display based on the Big Question

Photographs of the children investigating then preparing fresh vegetables using different techniques

Creation of a healthy vegetarian stew based on seasonal, local ingredients in a style that Celtic Tribes would have made

(What ingredients do we have access to now that could make their stew original?)

COMPASSION

Study of Boudicca and her suffering/life during Celtic times as part of a tribe

Sustainable foods and vegetarian ingredients

Discuss the wide variety of food that is available to us. This is not the case for everyone

Which lunch would they be grateful for?

The 'answers' to the BIG QUESTION

DEEP DIVE

COMMUNITY

Visit from Gregory Dengate – Foodbank Champion- from local Tesco Supermarket to teach children about work they could do with and for Sparkhill Foodbank

Publish recipes and photographs on the School Newsletter

S.M.I.L.E

Togas, Tribes and Territory
A day as a Roman,
archaeological dig experience,
visit a Roman Fort,
make and eat a stew

	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 **Evaluate** Carry out sensory evaluations of a variety of ingredients. Record the evaluations using tables/simple graphs Evaluate the ongoing work and the final product with reference to the design criteria and the views of others **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	meats/fish/cheese/eggs come from? **Skills/Concepts Explored Focused Tasks:** Learn to select and use a range of utensils and use a range of techniques to prepare ingredients hygienically including bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking. Basic food hygiene practises including the importance of following instructions to control risk. What should we do before we work with food? Why is following instructions important? **Key vocabulary:** Names of products, 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	Photographs to compare their school lunches now – which would they enjoy more?	**Health and safety** Pupils should be taught to work safely and hygienically, using tools, equipment, techniques and ingredients appropriate to the task. Prior to undertaking this project risk assessments should be carried out, including identifying whether there are children who are not permitted to taste or handle any food ingredients or products.	

	ASSESSMENT CRITERIA: • Know that food is grown, reared, and caught in the UK, Europe and the wider world. • Know how to prepare a variety of dishes safely and hygienically; that a healthy diet is made from a variety and balance of different food and drink; that food and drink are needed to provide energy for the body.

Cross Curricular Links

Mathematics and computing – making use of mathematical and computing skills to present results of sensory evaluations graphically. Mass kg/g

Spoken language – developing relevant vocabulary e.g. sensory descriptors/ names of utensils and techniques. Ask relevant questions to extend their knowledge. Consider and evaluate different viewpoints. Use discussion to develop understanding through exploring ideas.

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. Organise their work using e.g. headings, subheadings.

YEAR: 4 **TERM: Spring 1/2** **TITLE: Design, Make and Evaluate Packaging for a Chocolate Bar (Structures – Shell Structures with CAD)**

REVISION / REMIND / REVISIT 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. Familiarity with general purpose software that can be used to draw accurate shapes, such as Microsoft Word, or simple computer-aided design (CAD), such as 2D Primary by Techsoft

COHERENCE

THE BIG QUESTION

How does Chocolate Change Lives?

LINKS to NC/rationale:

Design

Generate realistic ideas and design criteria collaboratively through discussion, focussing 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

Make

Order the main stages of making

CREDIBILITY

Knowledge Acquired Investigative and Evaluative Activities:

Investigate a collection of shell structures including packaging. 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 (folded, corrugated, ribbed, laminated)? What information does it show and why? How attractive is the design?

Take a small package apart – identify and discuss parts of net including the tabs

Evaluate existing products to determine which designs the children think are most effective.

Discuss graphics – what style of graphics and lettering might they want to include in their product?

Skills/Concepts Explored Focused Tasks:

Children use kit parts with flat faces to construct nets, joining flat faces with making tape to create 3D shapes

Demonstrate skills and techniques of scoring, cutting

CREATIVITY

A variety of contributions to a classroom display based on the Big Question

Analysis of current products on the market/Cadbury's TV ads/design of existing packaging

Children's designs of packaging

Children's investigations into different shell structures and the ways in which they choose to strengthen them

COMPASSION

Study of George Cadbury and his philanthropy

Packaging to display Fairtrade logo and be eco-friendly/recyclable

The 'answers' to the BIG QUESTION

DEEP DIVE

COMMUNITY

Showcase of completed chocolate bar in designed packaging during 'Chocolate Evening' for parents

Fundraising opportunity to purchase bars – to donate to Sparkhill Foodbank

S.M.I.L.E

Chocolate

Parents are invited to a Dragon's Den style showcase where pupils present their specially designed chocolate bars and packaging. Continue liaison with Sparkhill Foodbank.

	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 **Evaluate** 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 **Technical Knowledge** Develop and use knowledge of how to construct strong, stiff shell structures Develop and use knowledge of nets and cubes and cuboids and more complex 3D shapes Know and use technical vocabulary relevant to the project	out and assembling pre drawn nets – construct simple box, show how window could be cut out and acetate added Explore different ways of stiffening and strengthening their shell structures – folding, shaping, corrugating, ribbing, laminating. Explore graphics techniques and media that could be used to achieve the desired appearance of their products Practise using CAD software to design the net, text and graphics for their product according to purposes Explore simple drawing software (Techsoft 2D Primary) – draw and manipulate shape Children use software to open existing drawings including nets and to draw nets of their own, using gridlines and pre-shaped tools Explore and try out different fill and font tools to become familiar with the graphic design aspects **Key vocabulary:** Shell structure, three-dimensional shape, shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs,		**Health and safety** Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.	

		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			
	ASSESSMENT CRITERIA: • Gather information about user needs; develop their own design criteria; describe the user, purpose and design features of their products and explain how they will work. • Generate realistic ideas based on user needs; use a range of drawing skills and discussion, prototypes, pattern pieces and computer-aided design. • Order the main stages of making; select suitable tools, equipment, materials and components and explain their choices. • Follow procedures for safety and hygiene; use a wider range of materials and components; measure, mark out, cut, shape, assemble, join, combine and finish with some accuracy. • Evaluate their ideas and products against their design criteria. • Investigate how well products have been designed and made, whether they are fit for purpose and meet user needs; why materials have been chosen, the methods of construction used and how well they work. • Know that materials have functional and aesthetic qualities; that systems have an input, process and output; how to program a computer to control their products; how to make strong, stiff shell structures; use the correct technical vocabulary. • Know about inventors, designers, engineers, chefs and manufacturers who have developed ground breaking products. GEORGE CADBURY				

Cross Curricular Links

Science – discuss the properties and suitability of materials for particular purposes.
Mathematics – 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 shapes using modelling materials
Spoken language – ask relevant questions to extend knowledge and understanding. Build their technical vocabulary.
Computing – design and create digital content on screen, creating nets for their products and combining text with graphics.
Art and design – use and develop drawing skills.
Writing – write for real purposes and audiences.
Computing – design and create digital content on screen using computer-aided design (CAD) software, creating nets for their products and combining graphics with text.

YEAR: 4 **TERM: Summer 2** **TITLE: Design, Make and Evaluate a Kit Car (Electrical systems – Simple Circuits and Switches)**

REVISION / REMIND / REVISIT

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.

COHERENCE

THE BIG QUESTION

Can I use an electrical circuit to power an innovative kit car?
Can I design a car for JLR?

LINKS to NC/rationale:

Design

Gather information about needs and wants, and develop design criteria to inform the design of products that are fir for purpose, aimed at individuals or groups

Generate, develop, model and communicate realistic ideas through discussion and annotated sketches, cross sectional and exploded diagrams

Make

Order the main stage of making

Select from and use tools and equipment to cut, shape, join and finish with some accuracy

CREDIBILITY

Knowledge Acquired Investigative and Evaluative Activities:

Discuss, investigate, and disassemble examples of battery powered products – Where and why are they used? How does the product work? What are its key features and components? How does the switch work? Is the product manually controlled or controlled by a computer/ What materials have been used and why?

Investigate examples of switches. Children use them in simple circuits – How might different types of switches be useful in different types of products?

Remind children about the dangers of mains electricity

Skills/Concepts Explored Focused Tasks:

Explore how to make manually controlled, simple series circuits with batteries and different types of switches, bulbs, and buzzers.

Which of the components in the circuit are input devices (switches) and which are output devices (bulbs and buzzers)

CREATIVITY

A variety of contributions to a classroom display based on the Big Question

Label a disassembled battery powered product – key features and components. Manually controlled? How? What materials have been used and why?

Poster – dangers of mains electricity

Photographs of examples of switches that the children have made.

Photographs of designs and finished products.

COMPASSION

Study of key inventors and the 'problems' that have led to their discoveries

The 'answers' to the BIG QUESTION

DEEP DIVE

COMMUNITY

Local designer invited into school to talk about the design process.

Visit to JLR

Showcase Event to show parents and other classes their kit cars – Open Evening in July

Parents vote on the car that they would most like to drive

	Select from and use electrical components according to their functional qualities **Evaluate** 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 **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.	How to find a fault in a circuit and correct it Use a simple computer control program with an interface box or standalone control box to physically control output devices Children make a variety of switches using card, corrugated plastic, aluminium foil. Paper clips. Children make switches that operate in different ways – press them, turn them, push them from side-to-side Children test their switches in a simple series circuit Children learn how to avoid making short circuits **Key vocabulary:** Series circuit, fault, connection, toggle switch, push to 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		**Health and safety** Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.	

	ASSESSMENT CRITERIA: • Gather information about user needs; develop their own design criteria; describe the user, purpose and design features of their products and explain how they will work. • Generate realistic ideas based on user needs; use a range of drawing skills and discussion, prototypes, pattern pieces and computer-aided design. • Order the main stages of making; select suitable tools, equipment, materials and components and explain their choices. • Follow procedures for safety and hygiene; use a wider range of materials and components; measure, mark out, cut, shape, assemble, join, combine and finish with some accuracy. • Evaluate their ideas and products against their design criteria. • Investigate how well products have been designed and made, whether they are fit for purpose and meet user needs; why materials have been chosen, the methods of construction used and how well they work. • Know that materials have functional and aesthetic qualities; that systems have an input, process and output; how to program a computer to control their products; how to make strong, stiff shell structures; use the correct technical vocabulary.

Cross Curricular Links

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. Maintain attention and participate actively in collaborative conversations, staying on topic and initiating and responding to comments. Develop understanding through speculating, hypothesising, imagining and exploring ideas.
Computing – design, write and debug programs that accomplish specific goals, including controlling physical systems.
Art and design – using and developing drawing skills.