Design and Technology Curriculum – Year 3 and 4 – Cycle B

Please refer to Previous Years' Geography assessment documents linked to hierarchies

Link to DT Association guidance – Link to Projects on a Page Documents

National Curriculum 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. **Cooking and nutrition** As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. ***Pupils should be taught to:*** **Key stage 2** ♣ understand and apply the principles of a healthy and varied diet ♣ prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques ♣ understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

	Developing Planning and Communicating Ideas	**Evaluating Processes and Products**	**Knowledge and Understanding of Materials and Components**
Non-Negotiables Year 3	• 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.	• 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	• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures
Non-Negotiables Year 4	• 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.	• 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	• 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.
	Autumn 1: Local produce - Food	**Spring2: Levers – story books**	**Summer 2: Electrical Circuits**
Hierarchies	**To master practical skills:** DT1: Prepare ingredients hygienically using appropriate utensils. DT2: Measure ingredients to the nearest gram accurately. DT3: Follow a recipe. DT4: Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). DT5: Cut materials accurately and safely by selecting appropriate tools. **To design, make, evaluate and improve:** DT17: Design with purpose by identifying opportunities to design. DT18: Make products by working efficiently (such as by carefully selecting materials). **To take inspirations form designers from history:** DT21: Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs. DT22: Improve upon existing designs, giving reasons for choices. **Revisiting Year ½:** Science - Healthy eating, DT - Designing a healthy snack **Revisiting Cycle A:**	**To master practical skills:** DT6: Measure and mark out to the nearest millimetre. DT7: Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). DT8: Select appropriate joining techniques. **To design, make, evaluate and improve:** DT17: Design with purpose by identifying opportunities to design. DT18: Make products by working efficiently (such as by carefully selecting materials). DT19: Refine work and techniques as work progresses, continually evaluating the product design. **To take inspirations form designers from history:** DT21: Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs. DT22: Improve upon existing designs, giving reasons for choices. DT23: Disassemble products to understand how they work. **Revisiting Year ½: DT -** Making a castle – working with stiff materials **Revisiting Cycle A:** Packaging – making nets	**To master practical skills:** DT12: Create series and parallel circuits DT13: Control and monitor models using software designed for this purpose. DT14: Choose suitable techniques to construct products or to repair items. **To design, make, evaluate and improve:** DT17: Design with purpose by identifying opportunities to design. DT18: Make products by working efficiently (such as by carefully selecting materials). DT19: Refine work and techniques as work progresses, continually evaluating the product design. DT20: Use software to design and represent product designs. **To take inspirations form designers from history:** DT21: Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs. DT22: Improve upon existing designs, giving reasons for choices. DT23: Disassemble products to understand how they work. **Revisiting Year ½:** **Revisiting Cycle A:** **Revisiting Cycle B:** Science term 1 - electricity
Resources	Guidance resources on shared drive Samples of local produce (plum bread, potatoes, honey, sausage, cheese) rape seed oil, fruit tart recipe, cooking utensils and implements, knives, spoons, plates, bowls, graters, table coverings, weighing scales, Ingredients for recipes chosen to be followed, Local farmers – Ownsworths – grow rapeseed **Texts:**	Guidance resources on shared drive a collection of books which have pop-up and moving parts, other products which include linkages eg toys, squeezy kitchen mops, examples of pop-up and moving mechanisms made beforehand, squared paper, coloured paper and card, paper fasteners or binders, paper straws, PVA glue, glue sticks, masking tape, thick corrugated card and drawing pins for modelling ideas, scissors, craft knives, cutting mats, safety rulers, hole punch, wavy line cutters, perforation cutters, computer and printer with graphics or word processing program **Texts:**	Guidance resources on shared drive a collection of lights for a variety of purposes, Internet connection and list of appropriate websites for research purposes, batteries, battery holders (if cylindrical batteries are used), bulbs, bulb holders, LEDs, crocodile connectors, lengths of connecting wire, aluminium foil, paper fasteners, paper clips, drawing pins, selection of suitable sheet materials, construction card, sticky tape, adhesives, reflective materials, scissors, staplers, wire stripper and cutter, small electrical screwdriver, appropriate control box, control program **Texts:**
Vocabulary	Local, seasonal, produce, harvest, crop, arable, cook, slice, grate, peel, simmer, boil, roast, bake, mix,	designing eg model, mock-up, plan, fit for the purpose making eg fold, adhesive, scoring, cutting, joining, temporary fixing, permanent fixing	designing eg user, specific, plan, labelled drawings, decide, list, classify, specification, design criteria making eg clip, rectify, fault, screw, join, connect

		knowledge and understanding eg linkage, lever, pivot, flexible, shape, joint, hinge, area, surface, covers, types of movement eg rotary, linear	knowledge and understanding eg electricity, circuit, battery, battery holder, bulb, bulb holder, wire, insulation, crocodile connector, aluminium foil, switch, reflector, energy, control, automatic
Flashback	• **the main features and uses of different types of vehicles** • **how to use a variety of materials and tools safely to create a vehicle** • **what wheels, chassis and axles are and know two different ways of attaching wheels to axles to create a vehicle they have designed**	• **many foods available within Lincolnshire and the UK are seasonal.** • **How to use a variety of utensils to prepare foods safely and hygienically (knife, grater, peeler)** • **how to follow instructions for a recipe**	• **know how to make lever, slider and flap mechanisms** • **how to cut and shape materials with some precision to make their mechanisms work.** • **how to create a range of different fonts and graphic techniques.**
Lesson 1	**WALT:** know British ingredients available all year round and the produce local to Lincolnshire. **Activities:** Children will learn which foods are local to Lincolnshire and why certain British foods are seasonal, and consider some pros and cons of foods from other parts of the world being available all year round. They may then either cook, or learn more about the process of wheat production. *Key procedural knowledge – peeling, grating and cutting fruits* **Children will know;** • what 'seasonal food' is. • some foods local to Lincolnshire. • How to use a variety of techniques to bake cakes safely and hygienically.	**WALT:** investigate and evaluate products with lever and linkage systems. **Activities:** Children will examine a variety of books with moving mechanisms and discuss their design and construction using some technical vocabulary. They will then more closely examine some moving mechanisms, sketching and labelling them. **Children will know;** • products that contain lever and linkage systems. • why a particular mechanism has been used. • technical vocabulary to describe lever and linkage systems	**WALT:** investigate a variety of lights and how they are designed and used. **Activities:** Children will study a variety of lights, describing some of their features, e.g. the way they reflect light, how they are designed to be free-standing. They may then label and describe the features of a light, or examine a variety of different lights. **Children will know;** • the features of commercially available lights which make them suitable for a specific purpose. • how a light and switches work. • how to work safely with electricity.
Lesson 2	**WALT:** know how to follow instructions for a recipe **Activities:** Children will learn how and when a variety of fruits are produced in Britain/Lincolnshire, including how farming methods are used to slow down or speed up the ripening process. They may then either cook, or visit a pick your own fruit farm. *Key procedural knowledge – peeling, grating and cutting fruits* **Children will know;** • some seasonal fruits are suited to the climate and weather conditions in Lincolnshire/Britain. • fruit may be processed and/or preserved. • How to follow instructions for a recipe using seasonal fruit or jam.	**WALT:** to experiment with a range of techniques to create moving mechanisms. **Activities:** Children will learn how to make some moving mechanisms (flaps, sliders and levers) using card or paper. They will then work independently or in groups to construct their own mechanisms. **Children will know;** • How to cut and shape materials with some precision to make their mechanisms work. • How to join and combine materials and components. • How to mark out and measure accurately	**WALT:** investigate which metal components can be used in a simple circuit. **Activities:** Children will consider what components are required when making a circuit that illuminates a bulb. They will then create simple circuits and test a variety of different components within them. They will make a series and parallel circuit. **Children will know;** • and use safe practices when working with electricity. • How to make a bulb light up in a simple circuit • metal components that conduct electricity
Lesson 3	**WALT:** know why vegetables form an important part of a healthy and varied diet. **Activities:** Children will learn about a variety of vegetables grown in Lincolnshire/Britain, when they are in season, and why they are important in a healthy diet. They may then either cook, or create a seasonal food collage. **Children will know;** • vegetables form an important part of a healthy diet. • when some Lincolnshire/British vegetables are in season. • How to prepare a healthy meal using seasonal vegetables	**WALT:** explore and experiment with a range of different fonts and graphic techniques. **Activities:** Children will consider the importance, and effects, of good graphic design and font selection for storybooks. They may then either practise sketching, shading and writing techniques, or use computer software to explore how fonts can be selected and altered so they are appropriate for a purpose. **Children will know;** • there are different fonts and graphic techniques. • how to create a range of different fonts and graphic techniques. • which designs they like best/ least and why	**WALT:** investigate how to use switches to control a bulb. **Activities:** Children will learn about a variety of switches, then make and test a variety of simple switches made using everyday materials or readily-available electrical components. **Children will know;** • and use safe practices when working with electricity. • How to create their own switches and know how to place them in a circuit to control a bulb. • suggestions about how they will use their ideas in their own light designs
Lesson 4	**WALT:** know how seasonally and locally produced meat can form part of a healthy diet. **Activities:** Children will learn about the nutritional value of meat, eggs and dairy products, as well as discover why some meats are seasonal and some are available all year round. They may then either cook, or try tasting and describing a range of vegetarian foods. **Children will know;**	**WALT:** be able to plan and design a storybook **Activities:** Working either individually or in groups, children will draw and annotate designs for a storybook with some moving mechanisms. **Children will know;** • how to create a design for a particular purpose. • suitable mechanisms to create moving parts in their storybook.	**WALT:** be able to design a light for a particular purpose. **Activities:** Children will draw and annotate a design for a light, considering its purpose, what switch to use, and how to conceal its circuitry **Children will know;** • Use what they have learnt to their design ideas. • how they will make their product.

	• a variety of food products that come from animals. • some reasons why some meat is not in season all-year-round. • prepare a healthy, savoury recipe using meat (or a vegetarian alternative)	• How to choose appropriate fonts and graphic techniques to use in their design.	• design a product which considers some of the needs of the user.
Lesson 5	**WALT:** know how local fish are caught or reared, processed and used in healthy meals in Lincolnshire. (Grimsby) **Activities:** Children will learn about how, where and when fish is farmed or caught in Britain, consider some issues associated with fishing, and learn about quality assurance marks on the fish we buy. They may then either cook, or create an information text about eating less fish to combat overfishing. **Children will know;** • some ways in which fish are caught or reared and processed in Lincolnshire. • some of the nutrients in fish. • How to prepare a healthy, savoury meal using fish or vegetarian alternatives.	**WALT:** be able to make a storybook with moving mechanisms using a design. **Activities:** Referring to a previously completed design, children will make storybooks with some moving mechanisms **Children will know;** • follow a design to create a storybook. • How to create moving mechanisms that works well. • How to create pages that are neat, accurate and creative.	**WALT:** To be able to make a product from a design. **Activities:** Referring to a previously completed design, children will make a light, ensuring it is safe and that it looks like their design. **Children will know;** • Use what they have learnt to their design ideas. • make a finished product which considers some of the needs of the user
Lesson 6	**WALT:** show what you have learned about eating seasonal food as part of a healthy, varied diet **Activities:** Children will learn about some unusual foods that are only in season for a brief period each year (i.e. asparagus, strawberries). They will then reflect on their prior learning, showing what they have understood through a variety of games and writing activities. **Children will know;** • some reasons why some foods are only in season for a short time. • why it is a good thing to eat seasonal food. • and apply what they have learned about seasonal food in Britain.	**WALT:** evaluate a finished product. **Activities:** Children will share, discuss and evaluate previously completed storybooks with moving mechanisms. **Children will know;** **Year 3:** • how to evaluate other people's finished products fairly and constructively. • what they would do differently if they were to make their product again	**WALT:** evaluate a finished product. **Activities:** Children will test, demonstrate and evaluate their finished light designs. They may do this either individually or with a partner. **Children will know;** • how to evaluate a finished product against original design criteria • ways in which they could modify or improve their product
Key Knowledge	**Children will know:** • many foods available within Lincolnshire and the UK are seasonal. • How to use a variety of utensils to prepare foods safely and hygienically (knife, grater, peeler) • how to follow instructions for a recipe	**Children will know:** • know how to make lever, slider and flap mechanisms • how to cut and shape materials with some precision to make their mechanisms work. • how to create a range of different fonts and graphic techniques.	**Children will know:** • and use safe practices when working with electricity. • How to make a bulb light up in a simple circuit • Improve on existing designs and give reasons for choices