

	Design and Technology Curriculum – Year 3 and 4 – Cycle B <u>Please refer to Previous Years’ Geography assessment documents linked to hierarchies</u> <u>Link to DT Association guidance</u> – Link to <u>Projects on a Page Documents</u>		
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: DT22: Improve upon existing designs, giving reasons for choices. Revisiting Year ½: Science - Healthy eating, DT - Designing a healthy snack	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 , Levers and linkages: interactive books KS2 Y4 Design and technology Lesson Resources Oak National Academy a collection of books which have pop-up and moving parts, other products which include linkages eg toys, squeezey 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 knowledge and understanding eg linkage, lever, pivot, flexible, shape, joint, hinge, area, surface, covers, types of movement eg rotary, linear	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 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. <i>Key procedural knowledge – peeling, grating and cutting fruits</i> 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. Vocabulary Seasonal – fluctuating or restricted availability according to the season or time of year. British – belonging to the British Isles Hygiene - maintaining health and preventing disease, especially through cleanliness. Fruit – the sweet and fleshy product of a tree or other plant that contains seed and can be eaten as food Vegetable – a plant or part of a plant used as food, such as a cabbage, potato, carrot, or bean	WALT: investigate reverse motion levers and linkages Activities: Children will examine a variety of books with moving mechanisms and discuss their design and construction using some technical vocabulary. They will then investigate and create a reverse motion lever and linkage. Children will know; - Levers are rigid bars that create movement by turning on a pivot point. - Linkages are systems that create movement using one or more levers. - Reverse motion linkages use a fixed pivot to change the direction of input so that the output goes the opposite way. - Making a reverse motion linkage can help with understanding its features and movement. Vocabulary Mechanism - a set of moving parts that make something happen Lever - a mechanism which creates movement Pivot point - a point around which an object moves or rotates Linkage - a mechanism connecting levers together Reverse motion linkage - a linkage that creates movement in opposite directions	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. Vocabulary Light – provide with light or lighting Circuit – a closed, continuous loop of conductive material (like wires) that allows electricity to flow from a power source (like a battery) through components (like light bulbs or motors) and back to the source Switch – a component that controls the flow of electricity in a circuit by connecting (turning on) or disconnecting (turning off) the conducting path Purpose – use of a particular product Annotations – notes added to labels and diagrams Function – how well something works and does its job i.e. pencil case that keeps pencils safe and stops them falling out
Lesson 2	WALT: know why fruits form an important part of a healthy and varied diet. Activities: Children will learn about a variety of fruit 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; - fruits form an important part of a healthy diet. - when some Lincolnshire/British fruits are in season - the other key elements of a balanced diet Vocabulary Fruit – the sweet and fleshy product of a tree or other plant that contains seed and can be eaten as food Vegetable – a plant or part of a plant used as food, such as a cabbage, potato, carrot, or bean Diet – the kinds of food that a person, animal, or community habitually eats Healthy - indicating or promoting good health	WALT: to experiment with parallel and push-pull linkages. Activities: Children will learn how to make parallel and push-pull linkages 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 Vocabulary Parallel linkage - a linkage that creates movement in the same direction using two pairs of levers Input - something that goes into a system Output - something that comes out of a system	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 Vocabulary Bulb – electrical component which produces light – converts electrical energy to light Light – provide with light or lighting Circuit – a closed, continuous loop of conductive material (like wires) that allows electricity to flow from a power source (like a battery) through components (like light bulbs or motors) and back to the source

		Push-pull linkage - a linkage that uses short levers to push and pull three other levers in the same direction	
Lesson 3	WALT: prepare, test and evaluate a range of seasonal fruits. Activities: Children we recap which fruits are seasonal in Lincolnshire during the autumn. They will have the opportunity to peel, cut and grate the fruit. They will taste test them and evaluate their texture and flavour in preparation for planning their crumble in the next lesson. Children will know: - how to cut, peel and grate using appropriate utensils safely. - How to evaluate the taste and texture of different fruits. - How to formulate ideas of what to include in their crumble. Vocabulary Hygiene - maintaining health and preventing disease, especially through cleanliness. Grating - reduce (food) to small shreds by rubbing it on a grater. Squeezing - extract the juice from (fruit or vegetables) Slicing - cut (something, especially food) into slices Peeling - remove the outer covering or skin from (a fruit or vegetable)	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 Vocabulary Packaging – materials used to wrap or protect goods Graphics - the art of drawing, especially as used in mathematics, engineering, etc. Branding - a company or product's identity Logo - a symbol or design that represents a company or product Simple - clear and easy to understand without unnecessary details	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 Vocabulary Bulb – electrical component which produces light – converts electrical energy to light Light – provide with light or lighting Circuit – a closed, continuous loop of conductive material (like wires) that allows electricity to flow from a power source (like a battery) through components (like light bulbs or motors) and back to the source Switch – a component that controls the flow of electricity in a circuit by connecting (turning on) or disconnecting (turning off) the conducting path
Lesson 4	WALT: plan a recipe based on a design criterion. Activities: Children will be given the design criteria. <i>Design a crumble to made in the Autumn using seasonal fruits that are grown in Lincolnshire.</i> Using their research from the previous lesson they should choose a combination of fruits and write a recipe based on an example ready to make in the next lesson. Children will know: - that a plan needs to meet a design criteria. - how to use research to make informed decisions that they can justify - that a plan needs to be clear and chronological Vocabulary Recipe - a set of instructions for preparing a particular dish, including a list of the ingredients required Seasonal – fluctuating or restricted availability according to the season or time of year. User - the person who uses the object Design – planning how a product will look or work Food product – any raw, semi-processed, or processed substance intended for human consumption	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. - How to choose appropriate fonts and graphic techniques to use in their design. Vocabulary Function - what a product should do Performance - how a product will work Movement - action created by a force (push or pull) Shaping - changing a material with or without cutting	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. - design a product which considers some of the needs of the user Vocabulary Purpose – The reason the photo frame is being made (e.g., gift, display, celebration). Function – how well something works and does its job i.e. pencil case that keeps pencils safe and stops them falling out User - the person who uses the object Design – planning how a product will look or work Design Criteria – The specific requirements the photo frame must meet (e.g., size, audience, style, purpose).
Lesson 5	WALT: create a recipe by following a plan. Activities: Children will use a range of procedural knowledge such as cutting, measuring, peeling, mixing, grating, cooking to develop the recipe that they planned to create their own autumn crumble. Children will know: - how to cut, peel and grate safely - How to measure ingredients accurately with weighing scales - How to follow a recipe. Vocabulary Hygiene - maintaining health and preventing disease, especially through cleanliness. Grating - reduce (food) to small shreds by rubbing it on a grater. Squeezing - extract the juice from (fruit or vegetables) Slicing - cut (something, especially food) into slices Peeling - remove the outer covering or skin from (a fruit or vegetable)	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. Vocabulary Aesthetics - how a product looks Tab - a flap used to join two shapes Components - different parts of a product Bridge - material used to keep mechanisms in place Cover - material hiding a linkage	WALT: 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 Vocabulary Product – an article or substance that is manufactured or refined for sale. Success criteria - a list which helps to see if the object does what it is expected to do Design Criteria – The specific requirements the photo frame must meet (e.g., size, audience, style, purpose). Assemble – Process of putting something together from its parts Aesthetics - how a product looks

Lesson 6	WALT: to evaluate their product based on the design criterion. Activities: Children will taste and evaluate their product based on flavour, texture and appearance. They will also evaluate an other groups work. They should then write an evaluation about what went well and what they could do differently next time. Children will know: • how to evaluate based on taste, texture and appearance. • how to provide constructive feedback to others. • how recognise what to do differently in the future. Vocabulary Testing - trying something to see if it works and to make changes or improvement to it Success criteria - a list which helps to see if the object does what it is expected to do Evaluate - checking how good something is and how to make it better Feedback - comments or suggestions on how to improve a product	WALT: evaluate a finished product. Activities: Children will share (present their book to their intended user) , discuss and evaluate previously completed storybooks with moving mechanisms. Children will know; • how to evaluate other people’s finished products fairly and constructively. • what they would do differently if they were to make their product again Vocabulary Manufacturers - people who make the product Evaluating - checking if a product is good or needs improving Aesthetics - how a product looks Environmental impact - ways to reduce, reuse and recycle	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 Vocabulary Testing - trying something to see if it works and to make changes or improvement to it Success criteria - a list which helps to see if the object does what it is expected to do Evaluate - checking how good something is and how to make it better Feedback - comments or suggestions on how to improve a product Aesthetics - how a product looks
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