

 North Leigh CE Primary: **Design Technology Curriculum sequence and progression of skills**

	EYFS	KS 1		Lower KS 2		Upper KS2	
Vocabulary	cutting, tools, hammers, safe, 3D, slot, join, baking, decorating, modelling, junk. build, scene, masks, puppets, sewing, cooking, handwashing, ingredients	Design, product, tools, equipment, construction materials, textiles, ingredients, design criteria, build, structures, stronger, stiffer, stable, mechanisms, diet, models, join, glue, scissors, knife, cut, hygiene, fruit and vegetables, wheels, slides, levers, folding, joining, rolling, measure, fabric, template, scales, balances, hygiene, predict, explore, evaluate, communicate		Products, generate, develop, model, communicate, investigate, analyse, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, computer-aided design, materials, components, design criteria, strengthen, stiffen, reinforce, mechanical systems, electrical systems, switches, bulbs, buzzers, motors, wheels, axles, turning mechanisms, hinges, levers, electricity program, monitor, control, prepare, cook, seasonality, ingredients, grown, reared, caught, processed, mechanisms, measure, cut, cm, grams, assembling, scoring, folding, precision, hole punch, drill, alter, adapt, presentation, alter, adapt, food storage, taste, texture, flavour, motion, light, step by step plans ,		Products, generate, develop, model, communicate, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, computer-aided design, materials, components, investigate, analyse, design criteria, strengthen, stiffen, reinforce, mechanical systems, electrical systems, switches, bulbs, buzzers, motors, program, monitor, control, prepare, cook, seasonality, ingredients, grown, reared, caught, processed, belts and pulleys, proportions, refine, clarify, constraints, hydraulics, pneumatics, scaled diagrams, estimate cost, mass produced, manual, handbook	
Curriculum Content	EYFS Learning	KS1 Learning		KS2 Learning			
	ELG: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function ELG: Share their creations, explaining the process they have used ELG: Return to and build on their previous learning, refining ideas and developing their ability to represent them Create collaboratively, sharing ideas, resources and skills	Design: design purposeful, functional, appealing products for themselves and other users based on design criteria generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make: select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate: explore and evaluate a range of existing products evaluate their ideas and products against design criteria Technical knowledge: build structures, exploring how they can be made stronger, stiffer and more stable explore and use mechanisms [eg levers, sliders, wheels and axles], in their products.		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 [eg gears, pulleys, cams, levers and linkages] understand and use electrical systems in their products [eg series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products.			
Topic Specific Vocabulary	Making a moving person: split pins, move, Baking bread: dough, kneed, ingredients, rise, roll, shape, yeast, flour, water, harvest, baking, oven, 3D Christmas cards: slot, join, 3D Christmas biscuits: baking, decorating, ingredients, Winter Scene: junk, modelling, build, Chinese New Year: lanterns. masks, fans, make, fold, press, 3D, open, Sock puppets: sewing, buttons, puppets, socks, eyes, Sandwiches: making, handwashing, ingredients, bread, fillings, choice,	Structures: - Magnet Movers: axle, design, model, packaging, template, stable, structure, unstable, strong, weak Mechanisms - Wheels & axles space buggy: axle, chassis, dowel, mechanism, axle holder, diagram, equipment, wheel Mechanisms – Dinosaur Moving Story book: sliders, adapt, design, model, assemble, mechanism, design criteria, input, template, test	Nutrition – A balanced diet: balanced diet, balance, carbohydrate, dairy, fruit, ingredients, oils, sugar, protein, vegetable, design criteria Textiles – Puppets: decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template, Structures – Castles: 2D, 3D, castle, design, key features, net, scoring, structures, shape, stable, stiff, strong, structure	Digital World – Electronic charm: smart wearables, product design, digital revolution, technology, analogue, digital, feature, function, digital world, micro:bit, electronic products, program, loops, initiate, simulator, control, monitor, sense, develop, template, fasten, test, user, CAD Textiles - Egyptian Collars: applique, cross-stitch, fabric, running stitch, patch, thread, embellish, template, cotton, silk, polyester, wrinkle, tear, water-resistant, breathable, matt, shiny, biodegrade, pinking Nutrition – Eating Seasonally: climate, diet, imported, ingredients, natural, processed, reared, recipe, seasonal, seasons, sugar	Electric Systems – Torches: battery, bulb, buzzer, conductor, circuit, circuit diagram, electric, insulator, series circuit, switch, component, design, design criteria, diagram, evaluation, LED, model, shape, target audience, input, recyclable, theme Mechanisms – Making a slingshot car: chassis, energy, kinetic, mechanism, air resistance, design, structure, graphics, research, model, template Structures – St Mary’s Church, North Leigh: 3D shapes, cladding, design criteria, innovative, natural, reinforce, structure	Mechanical systems -Space Pop-up Book: design, input, motion, mechanism, criteria, research, reinforce, model Structures – Bridges: beam bridge, arch bridge, truss bridge, strength, technique, corrugation, lamination, stiffness, rigid, factors, stability, visual appeal, aesthetics, joints, mark out, hardwood, softwood, wood file/rasp, sandpaper/glasspaper, bench hook/vice, tension saw/coping, assemble, saw, material properties, reinforce, wood sourcing, evaluate, quality of finish, accuracy Digital World – Navigating the World: smart, smartphone, equipment, navigation, cardinal compass, application (apps), pedometer, GPS tracker, design brief, design criteria, client, function, program, duplicate, replica, loop, variable, value, if statement, boolean, corrode, mouldable, lightweight, sustainable design	Textiles – Huipil making: annotate, decorate, design criteria, fabric, target customer, huipil, Maya, tunic, specification, template Electrical systems – Doodlers: circuit, circuit component, configuration, current, develop, DIY, investigate, problem-solve, product analysis, stable, target user Food – Come Dine with Me: Equipment, research, bridge method, cross contamination, preparation, flavours, method, recipe, cookbook, farm to fork, storyboard

Skills: design	Talk about what they want to make	Structures: Learn the importance of a clear design criteria including individual preferences and requirements in a design. Mechanisms - Wheels & axles: design a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move create clearly labelled drawings that illustrate movement Mechanisms – Dinosaur Moving Story Book: explain how to adapt mechanisms, using bridges or guides to control the movement design a moving story book for a given audience	Nutrition - A balanced diet: design a healthy wrap based on a food combination which works well together Textiles – Puppets: use a template to create a design for a puppet Structures – Castles: design a castle with key features to appeal to a specific person/purpose draw and label a castle design using 2D shapes, labelling the 3D shapes that will create the features, materials needed and colours	Digital World – Electronic charm: problem solving by suggesting potential features on a Micro: bit and justify my ideas develop design ideas for a technology pouch draw and manipulate 2D shapes, using computer-aided design to produce a point of sale badge Textiles – Egyptian Collars designing and make a template and apply individual design criteria Nutrition – Eating Seasonally create a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish	Electric Systems – Torches: design a torch, giving consideration to the target audience and create both design and success criteria focusing on features of individual design ideas Mechanisms – Make a slingshot car: design a shape that reduces air resistance draw a net to create a structure from choose shapes that increase or decrease speed as a result of air resistance personalise a design Structures – St Mary's Church, North Leigh: design a stable structure that is aesthetically pleasing and select materials to create a desired effect build frame structures designed to support weight	Mechanical systems – Space Pop-up Book: design a pop-up book which uses a mixture of structures and mechanisms name each mechanism, input and output accurately storyboard ideas for a book Structures – Bridges: design a stable structure that is able to support weight create a frame structure with a focus on triangulation Digital World - Navigating the World: write a design brief from information submitted by a client develop design criteria to fulfil the client's request consider and suggesting additional functions for my navigation tool develop a product idea through annotated sketches place and manoeuvre 3D objects, using CAD change the properties of, or combine one or more 3D objects, using CAD	Textiles – Huipil Making: design a Maya inspired tunic in accordance to a specification linked to set of design criteria annotate designs, to explain their decisions Electrical Systems - Doodlers: identify factors that could be changed on existing products and explaining how these would alter the form and function of the product develop design criteria based on findings from investigating existing products develop design criteria that clarifies the target user Food – Come Dine with Me: write a recipe, explaining the key steps, method and ingredients include facts and drawings from research undertaken
Skills: make	Make models randomly	Structures: making stable structures from card, tape and glue learn how to turn 2D nets into 3D structures follow instructions to cut and assemble the supporting structure make functioning movers and axles which are assembled into a main supporting structure Mechanisms - Wheels & axles: adapting mechanisms, when: they do not work as they should, to fit their vehicle design, to improve how they work after testing their vehicle Mechanisms – Dinosaur Moving Story Book: follow a design to create moving models that use levers and sliders	Nutrition - A balanced diet: slice food safely using the bridge or claw grip construct a wrap that meets a design brief Textiles – Puppets: cut fabric neatly with scissors use joining methods to decorate a puppet sequence the steps taken during construction Structures – Castles: construct a range of 3D geometric shapes using nets create special features for individual designs make facades from a range of recycled materials	Digital World – Electronic charm: use a template when cutting and assembling the pouch follow a list of design requirements select and use the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch apply functional features such as using foam to create soft buttons Textiles – Egyptian Collars follow design criteria to create a Egyptian collar select and cut fabrics with ease using fabric scissors thread needle with greater independence tie knots with greater independence sew cross stitch to join fabric decorating fabric using appliqué complete design ideas, embellishing the collars based on design ideas Nutrition – Eating Seasonally know how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination follow the instructions within a recipe	Electric Systems – Torches: make a torch with a working electrical circuit and switch use appropriate equipment to cut and attach materials assemble a torch according to the design and success criteria Mechanisms – Make a slingshot car: measure, mark, cut and assemble with increasing accuracy make a model based on a chosen design Structures – St Mary's Church, North Leigh: create a range of different shaped frame structures make a variety of free standing frame structures of different shapes and sizes select appropriate materials to build a strong structure and cladding reinforce corners to strengthen a structure create a design in accordance with a plan learn to create different textural effects with materials	Mechanical systems – Space Pop-up Book: follow a design brief to make a pop-up book, neatly and with focus on accuracy make mechanisms and/or structures using sliders, pivots and folds to produce movement use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result Structures – Bridges: make a range of different shaped beam bridges use triangles to create truss bridges that span a given distance and support a load build a wooden bridge structure independently measure and mark wood accurately select appropriate tools and equipment for particular tasks use the correct techniques to saws safely identify where a structure needs reinforcement and use card corners for support explain why selecting appropriating materials is an important part of the design process understand basic wood functional properties Digital World - Navigating the World: consider materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo) explain material choices and why they were chosen as part of a product concept program an N,E, S,W cardinal compass	Textiles – Huipil Making: use a template when cutting fabric to ensure they achieve the correct shape use pins effectively to secure a template to fabric without creases or bulges mark and cut fabric accurately, in accordance with their design sew a strong running stitch, making small, neat stitches and following the edge tie strong knots decorate a huipil, attaching features using thread finish the huipil with a secure fastening (such as buttons) learn different decorative stitches sew accurately with evenly spaced, neat stitches Electrical Systems - Doodlers: alter a product's form and function by tinkering with its configuration make a functional series circuit, incorporating a motor construct a product with consideration for the design criteria break down the construction process into steps so that others can make the product Food – Come Dine with Me: follow a recipe, including using the correct quantities of each ingredient adapt a recipe based on research work to a given timescale work safely and hygienically with independence
Skills: evaluate	Be excited about what they have made	Structures: evaluate finished model according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't suggest points for improvements Mechanisms - Wheels & axles: test wheel and axle mechanisms identify what stops the wheels from turning recognise that a wheel needs an axle in order to move Mechanisms – Dinosaur Moving Story Book: test a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed review the success of a product by testing it with its intended audience	Nutrition - A balanced diet: describe the taste, texture and smell of fruit and vegetables taste testing food combinations and final products describe the information that should be included on a label evaluate which grip was most effective Textiles – Puppets: reflect on a finished product, explaining likes and dislikes Structures – Castles: evaluate own work and the work of others based on the aesthetic of the finished product and in comparison to the original design suggest points for modification of the individual designs	Digital World – Electronic charm: analyse and evaluate an existing product identify the key features of a pouch Textiles – Egyptian Collars evaluate an end product and think of other ways in which to create similar items Nutrition – Eating Seasonally establish and use design criteria to help test and review dishes describe the benefits of seasonal fruits and vegetables and the impact on the environment suggesting points for improvement when making a seasonal tart	Electric Systems – Torches: evaluate electrical products test and evaluate the success of a final product Mechanisms – Make a slingshot car: evaluate the speed of a final product based on the effect of shape, on speed and the accuracy of workmanship on performance Structures – St Mary's Church, North Leigh: evaluate structures made by the class describe what characteristics of a design and construction made it the most effective consider effective and ineffective designs	Mechanical systems – Space Pop-up Book: evaluate the work of others and receive feedback on own work suggest points for improvement Structures – Bridges: adapt and improve own bridge structure by identifying points of weakness and reinforce them as necessary suggest points for improvements for own bridges and those designed by others Digital World - Navigating the World: explain how my program fits the design criteria and how it would be useful as part of a navigation tool develop an awareness of sustainable design identify key industries that utilise 3D CAD modelling and explain why describe how the product concept fits the client's request and how it will benefit the customers explain the key functions in my program, including any additions explain how my program fits the design criteria and how it would be useful as part of a navigation tool explain the key functions and features of my navigation tool to the client as part of a product concept pitch demonstrate a functional program as part of a product concept	Textiles – Huipil Making: reflect on their work continually throughout the design, make and evaluate process Electrical Systems - Doodlers: carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses determine which parts of a product affect its function and which parts affect its form analyse whether changes in configuration positively or negatively affect an existing product peer evaluate a set of instructions to build a product Food – Come Dine with Me: evaluate a recipe, considering: taste, smell, texture and origin of the food group taste test and score final products suggest and write up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process evaluate health and safety in production to minimise cross contamination

Technical knowledge		Structures: understand that the shape of materials can be changed to improve the strength and stiffness of structures understand that axles are used in structures and mechanisms to make parts turn in a circle begin to understand that different structures are used for different purposes know that a structure is something that has been made and put together Mechanisms - Wheels & axles: know that wheels need to be round to rotate and move understand that for a wheel to move it must be attached to a rotating axle know that an axle moves within an axle holder which is fixed to the vehicle or toy know that the frame of a vehicle (chassis) needs to be balanced Mechanisms – Dinosaur Moving Story Book: know that a mechanism is the parts of an object that move together know that a slider mechanism moves an object from side to side know that a slider mechanism has a slider, slots , guides and an object know that bridges and guides are bits of card that purposefully restrict the movement of the slider	Nutrition - A balanced diet: know that 'diet' means the food and drink that a person or animal usually eats understand what makes a balanced diet know where to find the nutritional information on packaging know that the five main food groups are: carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar understand that I should eat a range of different foods from each food group, and roughly how much of each food group know that nutrients are substances in food that all living things need to make energy, grow and develop to know that 'ingredients' means the items in a mixture or recipe know that I should only have a maximum of five teaspoons of sugar a day to stay healthy to know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars' Textiles – Puppets: know that 'joining technique' means connecting two pieces of material together know that there are various temporary methods of joining fabric by using staples, glue or pins understand that different techniques for joining materials can be used for different purposes understand that a template (or fabric pattern) is used to cut out the same shape multiple times know that drawing a design idea is useful to see how an idea will look Structures – Castles: understand that wide and flat based objects are more stable understand the importance of strength and stiffness in structures	Digital World – Electronic charm: understand that in programming a 'loop' is code that repeats something again and again until stopped know that a Micro:bit is a pocket-sized, codeable computer write a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm Textiles – Egyptian Collars know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces know that when two edges of fabric have been joined together it is called a seam know that it is important to leave space on the fabric for the seam understand that some products are turned inside out after sewing so the stitching is hidden Nutrition – Eating Seasonally know that not all fruits and vegetables can be grown in the UK know that climate affects food growth know that vegetables and fruit grow in certain seasons know that cooking instructions are known as a 'recipe' know that imported food is food which has been brought into the country know that exported food is food which has been sent to another country understand that imported foods travel from far away and this can negatively impact the environment know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre understand that vitamins, minerals and fibre are important for energy, growth and maintaining health know safety rules for using, storing and cleaning a knife safely know that similar coloured fruits and vegetables often have similar nutritional benefits	Electric Systems – Torches: understand that electrical conductors are materials which electricity can pass through understand that electrical insulators are materials which electricity cannot pass through know that a battery contains stored electricity that can be used to power products know that an electrical circuit must be complete for electricity to flow know that a switch can be used to complete and break an electrical circuit Mechanisms – Make a slingshot car: understand that all moving things have kinetic energy understand that kinetic energy is the energy that something (object/person) has by being in motion know that air resistance is the level of drag on an object as it is forced through the air understand that the shape of a moving object will affect how it moves due to air resistance Structures – St Mary's Church, North Leigh: understand what a frame structure is know that a 'free-standing' structure is one which can stand on its own	Mechanical systems – Space Pop-up Book: know that mechanisms control movement understand that mechanisms can be used to change one kind of motion into another understand how to use sliders, pivots and folds to create paper-based mechanisms Structures – Bridges: understand some different ways to reinforce structures understand how triangles can be used to reinforce bridges know that properties are words that describe the form and function of materials understand why material selection is important based on properties understand the material (functional and aesthetic) properties of wood Digital World - Navigating the World: know that accelerometers can detect movement understand that sensors can be useful in products as they mean the product can function without human input	Textiles – Huipil Making: understand that it is important to design clothing with the client/ target customer in mind know that using a template (or clothing pattern) helps to accurately mark out a design on fabric understand the importance of consistently sized stitches Electrical Systems - Doodlers: know that series circuits only have one direction for the electricity to flow know when there is a break in a series circuit, all components turn off know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin know a motorised product is one which uses a motor to function Food – Come Dine with Me: know that 'flavour' is how a food or drink tastes know that many countries have 'national dishes' which are recipes associated with that country know that 'processed food' means food that has been put through multiple changes in a factory understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork)
---------------------	--	---	---	--	--	--	---