



Kingsholm C of E Primary School and Nursery – Design & Technology Progression Ladder

	Nursery	Reception	End Goals	Year 1	Year 2	End Goals	Year 3	Year 4	End Goals	Year 5	Year 6	End Goals
Design	To have own ideas To explain what I want to do	To have own ideas To explain what I want to do To describe my design by using pictures, diagrams,	To have my own ideas and explain what I want to do. Use pictures and diagrams to describe my design	To have own ideas To explain what I want to do To explain what my product is for, and how it will work To use pictures and words to plan, begin to use models To design a product for myself following design criteria To research similar existing products	To have own ideas and plan what to do next To explain what I want to do and describe how I may do it To explain purpose of product, how it will work and how it will be suitable for the user To describe design using pictures, words, models, diagrams, begin to use ICT To design products for myself and others following design criteria To choose best tools and materials, and explain choices To use knowledge of existing products to produce ideas	To design purposeful, functional, appealing products for themselves and other users based on design criteria To generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology	To show design meets a range of requirements To describe purpose of product To follow a given design criteria To have at least one idea about how to create product To create a plan which shows order, equipment and tools To describe design using an accurately labelled sketch an./. d word To make design decisions To explain how product will work	To use research for design ideas To show design meets a range of requirements and is fit for purpose To begin to create own design criteria To have at least one idea about how to create product and suggest improvements for design. To produce a plan and explain it to others To include an annotated sketch To make and explain design decisions considering availability of resources To explain how product will work To make a prototype To begin to use computers to show design.	To describe the purpose of their products and indicate the design features that will appeal to intended users To use annotated sketches, cross-sectional drawings and diagrams to develop and communicate their ideas To use computer-aided design to develop and communicate their ideas	To begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose To create own design criteria To produce a logical, realistic plan and explain it to others. To use cross-sectional planning and annotated sketches To make design decisions considering time and resources. To clearly explain how parts of product will work. To model and refine design ideas by making prototypes and using pattern pieces. To use computer-aided designs	To identify features of design that will appeal to the intended user (market research) To create own design criteria and specification To follow and refine a logical plan. To use annotated sketches, cross-sectional planning and exploded diagrams To make design decisions, considering, resources and cost To clearly explain how parts of design will work, and how they are fit for purpose To independently model and refine design ideas by making prototypes and using pattern pieces To use computer-aided designs	<i>To 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</i> To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
Vocabulary	Idea, plan, investigate	Idea, plan, investigate, draw, label, diagram		planning, investigating, design, purpose, ideas, product, design criteria	product, function, user		model, prototype, annotated sketch, functional, innovative,	design brief, appealing, sensory evaluations		design decisions, functionality, authentic, purpose, design specification, research,	innovation, research, functional, mock-up, prototype	
Depth of Learning				Explain what you would change about your design and why.	Explain how your product evolved. Does it meet the design criteria?			What skills could you apply to achieve your design?				
Make	To use various construction materials. To begin to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces. To join construction pieces together to build and balance. To realise tools can be used for a purpose.	To construct with a purpose, using a variety of resources To use simple tools and techniques To build / construct with a wide range of objects To select tools & techniques to shape, assemble and join To replicate structures with materials / components To discuss how to make an activity safe and hygienic To record experiences by drawing, writing, voice recording	To construct with a purpose using a variety of resources. To record my experiences drawing, writing and voice recording. To explain how to make an activity safe and hygienic	To explain what I'm making and why To consider what I need to do next To select tools/equipment to cut, shape, join, finish and explain choices To measure, mark out, cut and shape, with support To choose suitable materials and explain choices To try to use finishing techniques to make product look good	To explain what I am making and why it fits the purpose To make suggestions as to what I need to do next. To join materials/components together in different ways To measure, mark out, cut and shape materials and components, with support. To describe which tools I'm using and why To choose suitable materials and explain choices depending on characteristics. To use finishing techniques to make product look good To work safely and hygienically	To select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] To select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics	To select suitable tools/equipment, explain choices; begin to use them accurately To select appropriate materials, fit for purpose. To work through plan in order To consider how good product will be To begin to measure, mark out, cut and shape materials/components with some accuracy To begin to assemble, join and combine materials and components with some accuracy To begin to apply a range of finishing techniques with some accuracy	To select suitable tools and equipment, explain choices in relation to required techniques and use accurately To select appropriate materials, fit for purpose; explain choices To work through plan in order. To measure, mark out, cut and shape materials/ components with some accuracy To assemble, join and combine materials and components with some accuracy To apply a range of finishing techniques with some accuracy	To select suitable tools and materials that are fit for purpose and explain choices To assemble, join and combine materials with some accuracy and apply a range of finishing techniques	To use selected tools/equipment with good level of precision To produce suitable lists of tools, equipment/materials needed To select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics To create and follow detailed step-by-step plans To explain how product will appeal to an audience To mainly accurately measure, mark out, cut and shape materials/components To mainly accurately assemble, join and combine materials/components To mainly accurately apply a range of finishing techniques To use techniques that involve a small number of steps	To use selected tools and equipment precisely To produce suitable lists of tools, equipment, materials needed, considering constraints To select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics To create, follow, and adapt detailed step-by-step plans To explain how product will appeal to audience; make changes to improve quality To accurately measure, mark out, cut and shape materials/components To accurately assemble, join and combine materials/components To accurately apply a range of finishing techniques To use techniques that involve a number of steps To be resourceful with practical problems	To select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately To 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



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		To understand different media can be combined for a purpose								To begin to be resourceful with practical problems		
Vocabulary	Construction, join, attach, tools	Purpose, assemble, safe, hygienic,		cut, shape, join, finish, finishing	Materials, components, characteristics		Product, accuracy, combine materials	Plan, mark out		Precision, functionality, step by step plan, appeal, audience,	Aesthetics, resourceful	
Depth of Learning		Can you connect what you have made to an experience/story?						How can you make connections with learning from other subjects such as science (using knowledge of materials and properties) to make decisions				
Evaluate	To give a reason why they have chosen a particular tool or materials	To adapt work if necessary To dismantle, examine, talk about existing objects/structures To consider and manage some risks To practise some appropriate safety measures independently	To adapt work where necessary To take managed risks and practise safety measures independently	To talk about my work, linking it to what I was asked to do To talk about existing products considering: use, materials, how they work, audience, where they might be used To talk about existing products, and say what is and isn't good To begin to talk about what could make product better	To describe what went well, thinking about design criteria to talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion To evaluate how good existing products are To talk about what I would do differently if I were to do it again and why	To explore and evaluate a range of existing products To evaluate their ideas and products against design criteria	To look at design criteria while designing and making To say what I would change to make design better To begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose To learn about some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products	To refer to design criteria while designing and making To use criteria to evaluate product To begin to explain how I could improve original design To evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose To discuss by whom, when and where products were designed To research whether products can be recycled or reused To know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products	To consider the views of others, including intended users, to improve their work To use their design criteria to evaluate their completed products and existing products	To evaluate quality of design while designing and making To evaluate ideas and finished product against specification, considering purpose and appearance. To test and evaluate final product To evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose To begin to evaluate how much products cost to make and how innovative they are To research how sustainable materials are To talk about some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products	To evaluate quality of design while designing and making; is it fit for purpose? To keep checking design is best it can be. To evaluate ideas and finished product against specification, stating if it's fit for purpose To test and evaluate final product; explain what would improve it and the effect different resources may have had To do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose To research and discuss how sustainable materials are To discuss some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products	To Investigate and analyse a range of existing products. To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. To understand how key events and individuals in design and technology have helped shape the world
Vocabulary	Improve, evaluate,	Safe,		Investigate, audience, better, product	planning, make, user, purpose, ideas, design criteria, function		model, prototype, annotated sketch, innovative, label, drawing, research	annotated sketch, appealing evaluating, design brief ,		design decisions, authentic, annotate, prototype, sustainability	Functionality, mock-up,	
Depth of Learning					Manipulate your product to suit a different audience					Suggest how you improved your product and justify your opinions about how this was achieved.	Using evidence taken from researching key inventors/designers/engineers etc., persuade me why you think your product is suitable for purpose. Address also why it may not.	
Technical knowledge Structures				To begin to measure and join materials, with some support To describe differences in materials To suggest ways to make material/product		To build structures, exploring how they can be made stronger, stiffer and more stable	To use appropriate materials To work accurately to make cuts and holes To join materials To begin to make strong, stiff structures		To make an accurate strong/ stiff structure that can continually be improved.		To select materials carefully, considering intended use of the product, the aesthetics and functionality. To explain how product meets design criteria To reinforce and strengthen a 3D frame	To apply their understanding of how to strengthen, stiffen and reinforce more complex structures



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				stronger, stiffer and more stable								
Vocabulary				Measure, join, stronger, stable, support, names of materials, ,cut,fold, roll, fix, base, top			shell structure, three dimensional (3-D) shape, net, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision,			frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent		
Depth of Learning				Explain how you can make it more stable.	Show reasoning behind why you decided on these designs and techniques. Can you adapt plans according to feedback?					Suggest some alternative plans and say what the good points and drawbacks are about each		
Mechanisms				To begin to use levers or slides	To begin to understand how to use wheels and axles	To explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	To select appropriate tools / techniques To alter product after checking, to make it better To use simple lever and linkages to create movement		To use levers, linkages and pneumatics to create movement confidently	To refine product after testing To grow in confidence about trying new / different ideas To begin to use cams, pulleys or gears to create movement	To refine product after testing, considering aesthetics, functionality and purpose To be confident to try new / different ideas To use cams, pulleys and gears to create movement	To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
Vocabulary				slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards	vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used		mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating	Mechanism, lever and linkage, pneumatics, movement, design criteria, prototype, inventor, engineer, product, evaluate, mechanical systems		Mechanism, cam, measure, join, cut, technique, refine, tools, materials, design, ground-breaking products, engineers, cross-sectional planning, annotation, evaluate	pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output	
Depth of Learning							Can you give reasons why you think your mechanism/design will work?					
Textiles					To measure textiles To join textiles together to make a product, and explain how I did it To carefully cut textiles to produce accurate pieces To explain choices of textile To understand that a 3D textile structure can be made from two identical fabric shapes.	To measure and join textiles to produce accurate pieces (2D/3D)	t	To think about user when choosing textiles To begin to devise a template To explain how to join things in a different way To understand that a simple fabric shape can be used to make a 3D textiles project	To think about the user when choosing textiles To begin to use different techniques to join materials.		To think about user's wants/needs and aesthetics when choosing textiles To make product attractive and strong To make a prototype To use a range of joining techniques To think about how product might be sold To understand that a single 3D textiles project can be made from a combination of fabric shapes.	To create an attractive/strong product, using a range of techniques. To understand a 3D project can be made from a combination of fabric shapes
Vocabulary					Design criteria Components Fabric Sewing			Textiles, user, fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique,			seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of	



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					Evaluate			strength, weakness, stiffening, templates, stitch, seam, seam allowance, sew, running stitch, product, thread, needle			textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, techniques, aesthetics, prototype,	
Depth of Learning					Can you compare textiles and say which you would use/not use and why?		What might happen if you used _____ instead of _____?	Conclude why you have chosen these materials.				
Electrical systems								To use number of components in circuit To understand how simple electrical circuits and components can be used to create functional products To program a computer to control product	To use a number of components in a circuit To be able to program a computer		To use different types of circuit in product To think of ways in which adding a circuit would improve product To program a computer to monitor changes in environment and control products	To understand and use electrical systems in their products [for example, series circuits
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, data			reed switch, toggle switch, push - to -make switch, push - to -break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series circuit, parallel circuit	
Depth of Learning										Manipulate components to change the brightness of the bulb, volume of buzzers etc.		
Cooking and nutrition	To begin to understand need for variety in food To begin to understand that eating well contributes to good health	To begin to understand some food preparation tools, techniques and processes To practise stirring, mixing, pouring, blending To discuss how to make an activity safe and hygienic To discuss use of senses To understand need for variety in food To begin to understand that eating well contributes to good health	To begin to understand the need for a variety of food and how this contributes to good health To begin to practise some food preparation techniques safely and hygienically	To describe textures To wash hands & clean surfaces To think of interesting ways to decorate food To say where some foods come from, (i.e. plant or animal) To describe differences between some food groups (i.e. sweet, vegetable etc.) To discuss how fruit and vegetables are healthy To cut, peel and grate safely, with support	To explain hygiene and keep a hygienic kitchen To describe properties of ingredients and importance of varied diet To say where food comes from (animal, underground etc.) To describe how food is farmed, home-grown, caught To draw eat well plate; explain there are groups of food To describe “five a day” To cut, peel and grate with increasing confidence	To use the basic principles of a healthy and varied diet to prepare dishes To understand where food comes from.	To carefully select ingredients To use equipment safely To make a product look attractive To begin to understand food comes from UK and wider world To describe how healthy diet= variety/balance of food/drinks To explain how food and drink are needed for active/healthy bodies. To prepare and cook some dishes safely and hygienically To grow in confidence using some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking	To explain how to be safe/hygienic To think about presenting product in interesting/ attractive ways To understand ingredients can be fresh, pre-cooked or processed To begin to understand about food being grown, reared or caught in the UK or wider world To describe eat well plate and how a healthy diet=variety / balance of food and drinks To explain importance of food and drink for active, healthy bodies To prepare and cook some dishes safely and hygienically To use some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking	To prepare and cook a variety of predominantly savoury dishes safely and hygienically including To begin to understand about food being grown in the UK or wider world To understand that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Plate	To explain how to be safe / hygienic and follow own guidelines To present product well - interesting, attractive, fit for purpose To begin to understand seasonality of foods To understand food can be grown, reared or caught in the UK and the wider world To describe how recipes can be adapted to change appearance, taste, texture, aroma To explain how there are different substances in food / drink needed for health To prepare and cook some savoury dishes safely and hygienically including, where appropriate, use of heat source To use range of techniques such as peeling, chopping, slicing, grating, mixing,	To understand a recipe can be adapted by adding / substituting ingredients To explain seasonality of foods To learn about food processing methods To name some types of food that are grown, reared or caught in the UK or wider world To adapt recipes to change appearance, taste, texture or aroma. To describe some of the different substances in food and drink, and how they can affect health To prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of heat source. To use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	To understand and apply the principles of a healthy and varied diet To prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques To understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.



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										spreading, kneading and baking.		
Vocabulary	Fruit and vegetable names, , eating well, healthy, unhealthy	Fruit and vegetable names, balanced, Preparation, tools, techniques, processes, stirring, mixing, pouring, blending, safe, hygienic, senses, variety, eating well, healthy, unhealthy, food groups		Textures, hygiene, appealing, Plant, animal, food groups, carbohydrate, protein, nutrition , diary, vitamins, fruit and vegetable names, healthy, cut, peel, grate, safely, equipment	fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients		name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, moist, cook, fresh, savoury, hygienic, harvested healthy/varied diet	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet		name of products, names of equipment, utensils, techniques and ingredients, recipe, texture, taste, sweet, sour, hot, spicy, appearance, aroma, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet	ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, whisk, beat, roll out, shape, sprinkle, crumble	
Depth of Learning				Can you manipulate the ingredients to make it: -healthier? -tastier? -suitable for babies? -more appetising?	Justify why you chose these ingredients.						Give reasons, thinking about food groups, nutritional value, textures, taste etc., why you have chosen to add these ingredients into your dish.	

Key

Explanations

Conjectures

Reasoning

Justifications

Arguments

Application

Complexity

Manipulation

Connections