

United Learning

Primary DT Curriculum



1. Rationale

The DT curriculum at United Learning provides children with a:

- **Relevant, coherent, progressive** knowledge of the design process and an appreciation of the work of a range of craftspeople:
 - **Investigate , disassemble and evaluate**
 - *How have materials and components been used?*
 - *How has the product been made?*
 - *Why has it been made this way?*
 - *What are the different parts of a product called and what does each do?*
 - *How does the way a product works relate to its intended purpose?*
 - **Focused practical task**
 - *How can materials, structures and techniques be tested?*
 - *How can materials and structures be joined?*
 - *Where might materials and structures fail?*
 - **Design and make, evaluate**
 - *How will ideas be explored, developed, communicated and modelled in a variety of ways?*
 - *How will a product be made; what materials, equipment and processes will be used?*
 - *What alternatives are there, if initial attempts fail?*
 - *How well did the product work? What were the strengths and areas for development?*
 - *How well did the final product relate to its intended purpose?*
- **Grounding in core disciplinary knowledge**, and the ability to approach challenging, design questions
 - Marking out and cutting skills
 - Fixing and joining skills
 - Mechanical and control skills
 - Finishing skills, including food hygiene
 - Related language skills



	Unit	Substantive Knowledge	Disciplinary Knowledge
Nursery	Autumn Polar Express	<ul style="list-style-type: none"> Develop their own ideas and then decide which materials to use to express them. 	<ul style="list-style-type: none"> Enjoy junk modelling. Explore printing using different objects. Join different materials using glue. Talk about what the materials look and feel like. Join materials together using sellotape. Use junk modelling to create own representations of objects/people. Choose different materials for different effects. Use different cut materials to make a simple image. Use objects or tools to print a pattern or image with support.
	Summer Once Upon a Time	<ul style="list-style-type: none"> Join different materials and explore different textures. 	
Reception	Autumn My Heroes <i>People who help us and superheroes</i>	<ul style="list-style-type: none"> Explore, use and refine a variety of artistic effects to express their ideas and feelings 	<ul style="list-style-type: none"> Print or collage independently to create a pattern or image. Make props to use in their role-play and small world play. Combine different techniques to create a picture. Evaluate and adapt their work. Explain how they created something, talking about the materials and techniques they have used. Confidently select and use variety of materials, tools and techniques independently, explain their choices, and evaluate their work.
	Spring Spring in our Step <i>Exploring life cycles</i>	<ul style="list-style-type: none"> Explore, use and refine a variety of artistic effects. Return to previous learning, refining ideas 	
	Summer Science Detectives	<ul style="list-style-type: none"> Look carefully at images or model of a skeleton. Choose from a variety of resources, what resources to use to create their own skeleton. Talk about the parts of the body and how they are connected. 	



Year 1

		Substantive knowledge	Disciplinary knowledge	
Autumn	Cooking & nutrition <i>Fruit kebabs</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Investigate, disassemble, evaluate Examine and name a range of fruits, handle and smell them, sketch and label Cut and compare two contrasting fruits, explain terms – skin, peel , flesh and use sensory vocab to describe Evaluate existing products to determine which is best and why Classify fruits according to colour, texture, taste, where grown, how they are eaten <p>Focused practical task</p> <ul style="list-style-type: none"> Discuss food hygiene practices Name and demonstrate use of simple tools Survey favourite fruits and represent in bar chart Taste test <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Identify target group and communicate what they intend to make, based on research conducted in survey Select and use appropriate fruit, processes and tools Evaluate product - record in pictures/writing how it look, tastes and if it matches the brief 	Skills	<p>Finishing skills, including food hygiene</p> <ul style="list-style-type: none"> Basic food handling, hygienic practices and personal hygiene, including how to control risks Using a variety of tools and equipment to peel, cut , grate, mix and mold food The nutritional value of fruit in a balanced diet
		Examples and vocabulary	<ul style="list-style-type: none"> Designing: choosing, investigating, tasting, arranging experimenting, popular, sort, bar chart, pictogram Making: washing, cleaning, peeling, cutting, slicing, grating Knowledge and understanding: salad, fruit, peel, flesh, skin, grater, chopping board, peeler, seeds, pips, stalk, juice, root, leaf, stone, bunch Sensory vocab: crisp, sharp, juicy, sweet, sour, squashy, smooth, crunchy, scented, waxy 	
		Craftspeople	Local chef	
Spring	Static structures <i>Castles</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Local area walk/visit to castle, sketching and discussion around different types of structures and how space is enclosed Label main features and relate to mathematical shapes <p>Focused practical task</p> <ul style="list-style-type: none"> Discuss how designers use models to develop and communicate their ideas Build rectangular frames using construction kits and explore ways of making them more stable e.g. a wider base, adding further parts <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Review the structure and features of a castle from work done in History Create design for model and say how they are going to make it Select from a range of materials Construct a model using 2D and 3D material selected to match the task Talk about their finished castle, identifying what has gone well and what they could have done better 	Skills	<p>Marking out and cutting</p> <ul style="list-style-type: none"> Use of scissors, snips and hole punching Make clear labelled drawings <p>Fixing and joining</p> <ul style="list-style-type: none"> Join 2D and 3D materials- gluing , sticking, tying, fixing with split pins Experiment with creating hinges <p>Finishing</p> <ul style="list-style-type: none"> Collage, painting
		Examples and vocabulary	<ul style="list-style-type: none"> Designing: choose, try out, discuss, drawing, label, list Making: Join, fix, plan, scissors, hole punch, masking tape Knowledge and understanding: structure, strong, weak, wall, roof, window, portcullis, ramparts, drawbridge, turret, hinge, square, rectangle, triangle, cube, cuboid, cylinder side , edge, surface, on top of, underneath, smaller than, larger than, symmetrical, beside, next to 	
		Craftspeople	Local architect	
Summer	Mechanisms <i>Book with moving parts</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Share and evaluate a range of books with moving parts – what does the part do? How does it work? Does it work well? Introduce levers and sliders and how they make parts move Show examples of how levers and pivots work and introduce key vocabulary <p>Focused practical task</p> <ul style="list-style-type: none"> Explore simple mechanisms and levers using strips of card and construction kits Explore ways of stiffening strips of card using pipe cleaners, straws. <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Plan story showing the evolution of a form of transport e.g. bicycle, car – which parts will move and how. Which order will things be done in? Create paper prototype then card version Evaluate how well the moving parts work, the impact on the reader and how well it matches the intended outcome 	Skills	<p>Marking out and cutting</p> <ul style="list-style-type: none"> Assemble strips of card to make levers and sliders <p>Fixing and joining</p> <ul style="list-style-type: none"> Levers <p>Finishing</p> <ul style="list-style-type: none"> Collage, colouring
		Examples and vocabulary	<ul style="list-style-type: none"> Designing: idea ,discuss, choose, drawing, labelling Making: hole punch, paper fastener, join, cut, planning Knowledge and understanding: moving, handle, lever, pivot ,pull, slider, direction, balance, movement, forward, backwards, order, sequence, length 	
		Craftspeople		

Year 2

		Substantive knowledge	Disciplinary knowledge	
Autumn	Textiles <i>Hand puppets</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Examine a range of finger puppets – what are they made of?, how are they put together? What has been added? Who are they for? How well made are they? Draw and label, rate an example of a finger puppet <p>Focused practical task</p> <ul style="list-style-type: none"> Explore simple ways to add features to bring puppets to life <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Discuss purpose of finger puppets – story telling, role play, entertainment Agree simple criteria: must be an animal to link to science (living things and their habitats), a good puppet should be..... Consider how a basic template might be adapted and sewing/fixing techniques can be used Make paper mock up and adjust as needed when making fabric version Evaluate against design criteria 	<p>Skills</p> <p>Marking out and cutting</p> <ul style="list-style-type: none"> Make clear labelled drawings Using templates as a pre cursor to pattern making. Experiment with using a template to draw and cut out 2 identical shapes <p>Cutting fabric</p> <p>Fixing and joining</p> <ul style="list-style-type: none"> Joining fabric by sewing-Practice basic sewing techniques – starting, ending, running stitch 	
		<p>Examples and vocabulary</p> <ul style="list-style-type: none"> Designing: user, list, label, drawings, ideas, mock-up, choose, decide, evaluate, try out, standard unit Making: plan, template, fabric, cutting out, sewing, needle, thread, running stitch, adding Knowledge and understanding: seam, stitch, strong, quality, features, strengthen, reflective symmetry, position, to, towards 	<p>Craftspeople</p> <p>J. Henson (Muppets creator)</p>	
Spring	Mechanisms <i>Vehicles (fire engine)</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Discuss and list different types of vehicles and their features – why do vehicles have wheels? Are they all the same size? How many? Why are vehicles different shapes? Why do some have parts that move/light up?. Identify parts of vehicles – wheel, axles, chassis, body, cab <p>Focused practical task</p> <ul style="list-style-type: none"> Look at pictures in books and magazines and sort into Venn based on parts identified <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Set design criteria – who is the suit for? What features are needed? Why? Draw out and label the design Use graphics program to create a template to act as a pattern Identify tools and materials needed and method of joining fabrics to be used Set order for making Evaluate against design criteria 	<p>Skills</p> <p>Marking out and cutting</p> <ul style="list-style-type: none"> Use of base kits/use of net for cuboid <p>Fixing and joining</p> <ul style="list-style-type: none"> Try out different ways of making axel holders <p>Mechanical and control skills</p> <ul style="list-style-type: none"> Join wheels and axles <p>Finishing</p> <ul style="list-style-type: none"> Try out different finishing techniques –collage, paint, cut out shapes, computer generated images to match a design brief. 	
		<p>Examples and vocabulary</p> <ul style="list-style-type: none"> Designing: purpose, user, use, explore, predict, size, shape, style, function, features- ladder, hose, siren, cab Making: joining, combining, connecting, testing, attaching adding, changing Knowledge and understanding: vehicle, wheels, chassis, axel, doweling, hole punch, logo, distance, 	<p>Craftspeople</p> <p>Local museum of transport</p>	
Summer	Textiles <i>A suit for an astronaut</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Look at images/video of component parts of a space suit Discuss types of fabric used and their properties <p>Focused practical task</p> <ul style="list-style-type: none"> Become familiar with paint or draw software package <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Set design criteria – who is the suit for? What features are needed? Why? Draw out and label the design Use graphics program to create a template to act as a pattern Identify tools and materials needed and method of joining fabrics to be used Set order for making Evaluate against design criteria 	<p>Skills</p> <p>Marking out and cutting</p> <ul style="list-style-type: none"> Make clear labelled drawings Using paper patterns on fabric- pinning, tracing around outline of component parts Cutting with precision Using computer graphics drawing packages as part of the design process <p>Fixing and joining</p> <ul style="list-style-type: none"> Fabric joining techniques – lacing, stitching, stapling, gluing, taping 	
		<p>Examples and vocabulary</p> <ul style="list-style-type: none"> Designing: discuss , select, choose, try out, ideas, adapt, adaptations, experiment, evaluate, mock up, predict, properties, reasons, comfort, practical, light weight, flexible, tough, warm, heat proof Making: pin, pattern, parts, join, cut, measure, shape, fabric, template, needle, thread, ruler, tape measure Knowledge and understanding: outline, stitch, strengthen, quality, seam, centre, side, panel, line, Sensory vocab: 	<p>Craftspeople</p> <p>Amy Ross (NASSA)</p>	

Year 3

		Substantive knowledge	Disciplinary knowledge
Autumn	Free standing structures <i>Photo frame</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Investigate free standing item – why is it important they are stable? How does this relate to their purpose? Would they work if they were not strong and stable? Consider how photo frames stand up, look at range of examples Consider design features relating to its purpose – how easy is it to insert a photo? How well can it be seen? Who would use it? How does this link to the style/finish of the frame? Identify component parts and label drawings <p>Focused practical task</p> <ul style="list-style-type: none"> Use construction kit to investigate building stable structures –chair/bridge Make free standing photo frame shape from pipe cleaners and a sheet of card/paper <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Consider design criteria – who is the frame for? How will it stand up?, How will the photo be added? What shape will it be? Where will the weak points be? How will they be reinforced and decorated? Sketch and label design. Set order for making Evaluate against design criteria 	<p>Skills</p> <p>Marking out and cutting</p> <ul style="list-style-type: none"> Developing ideas through precise and labelled drawings Use of a junior hacksaw <p>Fixing and joining</p> <ul style="list-style-type: none"> Mitre joint Stiffening materials and making stable structures - rolling, folding, and layering, reinforcing corners <p>Finishing</p> <ul style="list-style-type: none"> Collage, painting, decoupage, varnishing for durability
		<p>Examples and vocabulary</p> <ul style="list-style-type: none"> Designing: user, choice, decoration quality, component parts, purpose, size, shape, orientation Making: planning, order, rolling, layering, cutting, mitre, joint, cutting finish, board, bolsar Knowledge and understanding: stable, free standing, stiffen, frame, sturdy, reinforce, deep, narrow, shallow, thick, thin, distance, align, margin 	<p>Craftspeople</p> <p>Visit to a local Art gallery</p>
Spring	Mechanisms and control <i>Pneumatics (moving monsters)</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Look at objects that use air to make them work – recorder, pump, party blower – What does the air do? How has this been used in the design of these products? Demonstrate simple pneumatic systems with a balloon and tubing, x2 syringes <p>Focused practical task</p> <ul style="list-style-type: none"> Explore making a pneumatic system with either balloons or syringes and tubing Revise making hinges <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Discuss the design brief – consider what the monster needs to be able to do e.g. open its mouth, lift its head, move its wings. How big will it be?, How will the movement be achieved? What materials are needed? Audience/user? Consider the constraints – weight, stability, range of materials available, Complete detailed and labelled drawings Set order for making Evaluate against design criteria 	<p>Skills</p> <p>Marking out and cutting</p> <ul style="list-style-type: none"> Consider the limitations on scale and scope of design ideas and reflect these in precise, labelled drawings Work safely with a range of hand tools <p>Mechanical and control skills</p> <ul style="list-style-type: none"> Understand how pneumatic systems work Understand how simple levers work <p>Fixing and joining</p> <ul style="list-style-type: none"> Extend understanding of ways of fixing and joining components and selecting most appropriate for a given task
		<p>Examples and vocabulary</p> <ul style="list-style-type: none"> Designing: mind map, suggestion, evaluate, ideas, constraints, limitations, possible, impossible, probable, likely Making: Planning, storyboarding, components, pieces, fixing, syringe, tubing, attaching, finishing, decorating Knowledge and understanding: control, pneumatic, system, pressure, inflate, deflate, output, pump, hinge, fastest, slowest, often, always, sometimes, never 	<p>Craftspeople</p> <p>R. L. Stephenson (Rocket)</p>
Summer	Cooking & nutrition <i>Greek salad</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Understand the ‘balanced plate’ model of food groups, name the groups Look at a range of packaged salads and evaluate appearance, taste, smell, texture Survey the most popular choice and consider reasons for choices made How have the salads been packed and stored in the shops to preserve their life? Which materials have been used and why? What happens to food that is wrongly/badly packaged? Discuss which sorts of foods need to be kept in the fridge <p>Focused practical task</p> <ul style="list-style-type: none"> Practise using knife to cut and slice, grater safely and correctly. <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Create design from specified range of ingredients for agreed user Set order for making Evaluate against design criteria 	<p>Skills</p> <p>Marking out and cutting</p> <ul style="list-style-type: none"> Use sharp tools correctly <p>Finishing skills, including food hygiene</p> <ul style="list-style-type: none"> Food preparation techniques(tearing, cutting, slicing, grating) and ways of combining foods to make a product for a particular purpose Combining foods on the basis of taste, appearance and texture Understanding of a healthy and balanced diet Understanding of food classes
		<p>Examples and vocabulary</p> <ul style="list-style-type: none"> Designing: texture, taste, appearance, healthy,, reference, criteria, refrigeration, freezing, salting, preserving, pickling, brining Making: cut, slice, grate, chop, blend, chopping board, knife, grater Knowledge and understanding: ingredients, food groups, hygiene, high risk, healthy eating, food preparation, balanced plate, sensory – sweet, sour, bitter, salty 	<p>Craftspeople</p> <p>Jamie Oliver, Vefa Alexiadou</p>

Year 4

		Substantive knowledge	Disciplinary knowledge	
Autumn	Mechanisms <i>Linkages</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Look at pop up books and greetings cards with pop ups and moving parts – spinners, levers, tabs, sliders. How do the parts move? What are the mechanisms and how do they work? Number of parts? How are parts joined? What is the impact made? Look at layout, size, font used for text and how pictures , colour has been used <p>Focused practical task</p> <ul style="list-style-type: none"> Model different types of mechanism using paper/card, split pins, paper clips, drawing pins <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Set design brief – A guide to the rainforest with pop ups and moving parts for a child What mechanisms will be used? How many moving parts? How many pages? Consider the way each page will be finished. Make an outline plan, list tools materials and processes and set the order of making Evaluate 	Skills	<p>Marking out and cutting</p> <ul style="list-style-type: none"> Begin to develop alternative ideas, using drawings, plans and models and make choices between them Measuring accurately, marking out, cutting, folding, scoring, <p>Fixing and joining</p> <ul style="list-style-type: none"> Understand linkage mechanisms and the type of movement they produce Relate a mechanism to its purpose and select for a desired type of movement <p>Finishing</p> <ul style="list-style-type: none"> Collage, printing, drawing, use of font, size, colour, layout . Understand what makes a quality finish
			Examples and vocabulary	<ul style="list-style-type: none"> Designing: model, mock up, plan , fit for purpose Making: fold, adhesive, score, cut, join, temporary fixing, permanent fixing Knowledge and understanding: linkage, level, pivot, flexible, shape, joint, hinge, area, surface, cover, linear and rotary movement
			Craftspeople	Matthew Rhinehart
Spring	Textiles <i>Purse for Rio carnival</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Look at a collection of purses, wallets and belt bags. Consider the seams, seam allowance, fastenings and identify key parts – gusset, strap, hem What sort of fabric is used? How does this relate to its purpose? How is it reinforced? Who is it used by? <p>Focused practical task</p> <ul style="list-style-type: none"> Practise running stitch, back stitch, starting and finishing, weaving and knitting on pieces of fabric – Which is strongest and why? Discuss the properties of different types of fabric and select one suitable for the task Practise with different types of fastening and select one suitable for the task <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Set design criteria- draw up a design spec with alternative ideas , final drawings and action plan Review progress – How well is this working? Are changes to the design needed? Evaluate finished product 	Skills	<p>Marking out and cutting</p> <ul style="list-style-type: none"> Using patterns and templates with more than 2 pieces Begin to develop alternative ideas, using drawings, plans and models and make choices between them <p>Fixing and joining</p> <ul style="list-style-type: none"> Joining and reinforcing fabrics Demonstrate fabric can be joined in a number of different ways – sewing using a range of stitches <p>Finishing</p> <ul style="list-style-type: none"> Use decorative techniques such as dyeing and embroidery, embellishing, applique, fabric paints, fastenings
			Examples and vocabulary	<ul style="list-style-type: none"> Designing: user, purpose, design criteria, alternatives, model, specification, stiffening, reinforcement Making: pattern, template, strength, support Knowledge and understanding: fabric, fastening (and related types), compartment
			Craftspeople	Jackie Gale
Summer	Electrical control <i>Alarms</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Discuss examples of alarm systems – when and where they are used and what for. Discuss dangers of mains electricity Look at and take apart a range of commercially produced switches which work in different ways – slide, reed, tilt, push to make, push to break <p>Focused practical task</p> <ul style="list-style-type: none"> Experiment with producing circuits that are triggered in some way e.g. someone treading on something or lifting something, including using a computer programme Discuss the idea of 'feedback' in an alarm system e.g. motion sensors trigger bell to ring <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Consider the design brief – What type of circuit and switch will be used ? How will a control box or programme be used? Action plan Create a proto type and review how well it works. Review during the process, Test Evaluate final product linking back to the design brief 	Skills	<p>Marking out and cutting</p> <ul style="list-style-type: none"> Develop digital working prototypes <p>Mechanical and control skills</p> <ul style="list-style-type: none"> Understand simple electrical control. Understand how to use digital technology to produce simulations using a computer control programme – inputs and outputs,
			Examples and vocabulary	<ul style="list-style-type: none"> Designing: digital prototype, communicate, model, Making: join, circuit, alarm, rectify, fault, test, adjust, modify, Knowledge and understanding: Feedback, input, output, LED, bulbs, buzzers, control
			Craftspeople	School alarm system

Year 5

		Substantive knowledge	Disciplinary knowledge	
Autumn	Structures <i>Musical instruments</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Discuss a range of musical instruments – what are they made of? What is the structure (solid or hollow), does it have a box/stem/arm? What part makes the noise? Which parts need to be strong? How can the sounds be varied? Why are instruments so important to different cultures? Listen to the sounds they make/music from different cultures showcasing the different instruments. <p>Focused practical task</p> <ul style="list-style-type: none"> Experiment with making sounds using a range of containers and other resources that can be combined to create shakers, scrapers, strings, drums Discuss the properties of the material, how they can be strengthened and the sounds made when they are combined <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Identify a purpose for the instrument, e.g. to create rainforest music, which design aspects and set and which are flexible (materials) Select way to record their ideas so others will understand them Set order for making Evaluate against design criteria 	Skills	<p>Marking out and cutting</p> <ul style="list-style-type: none"> Understand the working characteristics of materials and how this links to the product's intended purpose, selecting appropriately Begin to make choices about the way design ideas are presented <p>Fixing and joining</p> <ul style="list-style-type: none"> Understand how different materials can be reinforced for different purposes Assemble materials in temporary ways as a trial prior to finalizing design choices <p>Finishing</p> <ul style="list-style-type: none"> Select appropriate methods and resources for finishing a design that reflect the intended use, cultural, geographical or historical influences
			Examples and vocabulary	<ul style="list-style-type: none"> Designing: investigate, plan, research, texture, intention, structure, outcome Making: mouldable material, adhesive, wood glue, shaping, cutting, flexible, strong, pliable solid, hollow Knowledge and understanding: sound, note, pitch, duration, dynamics, tempo, timbre, strengthen, reinforce,
			Craftspeople	Local music shop/concert hall; peripatetic music teacher
Spring	Mechanisms <i>Moving toys (Roman siege machine)</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Investigate toys with cams – which parts turn, move and how are the parts attached? Look at the decoration around the mechanism Make models using construction kits and consider the use of a cam (refer to above question) <p>Focused practical task</p> <ul style="list-style-type: none"> Try assembling different shaped cams using card and split pins and observe their movement- how does it change depending on the shape of the cam? Discuss and demonstrate safety aspects of using a bench hook and drill Demonstrate need to measure accurately when mounting the mechanism, how to keep cam in place and how to use a wheel to make a handle Experiment adding holes for fixings with opened out cardboard boxes <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Agree the design brief – purpose and audience Create storyboard plan- step by step order, identifying materials and tools needed and desired finish Review progress – How well is this working? Are changes to the design needed? Evaluate finished product 	Skills	<p>Marking out and cutting</p> <ul style="list-style-type: none"> Measure accurately(when marking out and drilling holes and mounting the cam Using sharp tools safely – paper drill, hole punch Design planning using a storyboard <p>Fixing and joining</p> <ul style="list-style-type: none"> Planning ahead, anticipating future actions e.g. using nets to pre-drill holes Cut and join parts to a main structure <p>Mechanisms and control</p> <ul style="list-style-type: none"> Understand how to control movement with a cam mechanism
			Examples and vocabulary	<ul style="list-style-type: none"> Designing: sequence, annotated, diagram, sketch, storyboard, choice, decision, prototype, model Making: shape, assemble, accurate, saw, bench hook, clamp, drill, wheels Knowledge and understanding: cam, follower, mechanism, movement linear and rotary motion, pivot, off centre, axle, force, framework, shaft
			Craftspeople	Toymakers guild
Summer	Cooking & nutrition <i>Bread</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Look at a variety of breads from around the world and cultural traditions Discuss taste, shape, ingredients, texture, survey preferences Understand how bread fits into a balanced diet <p>Focused practical task</p> <ul style="list-style-type: none"> Experiment with different types of flour and adding different ingredients to bread dough – raisins, choc chips. Try shaping dough and adding different toppings-eg seeds <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Decide what kind of bread to make and for what sort of occasion Create ingredients list and step by step instructions Make and bake bread, working hygienically and safely Evaluate finished product. 	Skills	<p>Marking out and cutting</p> <ul style="list-style-type: none"> Create own design specification <p>Finishing skills, including food hygiene</p> <ul style="list-style-type: none"> Accurate measuring and weighing skills, understand that the properties and quantities of ingredients will affect the final product Increased awareness of food safety and hygiene, including the use of ovens
			Examples and vocabulary	<ul style="list-style-type: none"> Designing: evaluating, investigation, preference, profile, specification, criteria, fair test Making: ingredients, quantities, shaping, mixing, topping, kneading, proving, baking, cooking method, glazing, washing Knowledge and understanding: Yeast, wheat, grain, flour, dough, crust, rise
			Craftspeople	Paul Hollywood; local bakery

Year 6

		Substantive knowledge	Disciplinary knowledge	
Autumn	Structures <i>Aqueducts</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Investigate a range of structures – What materials used? Why? How have they been used? What do the different parts do? Which structures are the strongest? Research structure of aqueducts – produce labelled drawings <p>Focused practical task</p> <ul style="list-style-type: none"> Investigate strengthening a square structure with diagonals and triangles, test Experiment with ways of joining materials-plastic, paper, wood , fabric <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Discuss brief of designing an aqueduct to contain water and transport a model boat Revise findings re how to strengthen structures Develop idea through drawings and models – How will it stand up? Where are the weak points? How will they be reinforced? it stop water from leaking? Test and adjust Make and evaluate against the brief 	Skills	<p>Marking out and cutting</p> <ul style="list-style-type: none"> Produce several clear design ideas with step by step instructions and resources needed <p>Fixing and joining</p> <ul style="list-style-type: none"> Know that structures can fail when loaded Know how to reinforce structures and to research info about this from a range of sources Use a variety of temporary and permanent joining techniques, including framework, materials and textiles.
			Examples and vocabulary	<ul style="list-style-type: none"> Designing: exploded diagrams, improvements, modify, alternative proposal Making: strength, material, triangle, diagonal, bracket, vertical, horizontal, tension, bending, twisting Knowledge and understanding: reinforce, points of weakness/tension, waterproofing
			Craftspeople	Sir Edward Leader Williams
Spring	Mechanisms <i>Controllable vehicle (Viking longboat)</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Experiment with controllable vehicles and consider – Where does the power come from? Compare similarities and differences How are the models constructed and component parts joined together? Draw and label diagrams from a range of angles (include example of an airboat) <p>Focused practical task</p> <ul style="list-style-type: none"> Investigate a range of switches and how they work – build examples Investigate using a motor to power a fan – how can this produce forward motion? Experiment with paper, motors to create forward motion, how can we change speed and direction? Demonstrate the use of equipment - e.g. wire cutters,/strippers, mounting clips, connector strips <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Discuss design brief – an airboat Viking long ship and consider needs of the user Create designs vis drawings and models, make adjustments after testing Evaluate final product against the brief 	Skills	<p>Marking out and cutting</p> <ul style="list-style-type: none"> Draw and label diagrams from different view points <p>Mechanical and control skills</p> <ul style="list-style-type: none"> Understand how products can be driven by electricity Control speed and direction Use different sorts of switches <p>Fixing and joining</p> <ul style="list-style-type: none"> Assembling components to make working models <p>Finishing</p> <ul style="list-style-type: none"> Develop a structure with finishing techniques including cladding
			Examples and vocabulary	<ul style="list-style-type: none"> Designing: exploded diagrams, improvements, modify, view point Making: cutting, cladding, finishing, assembling, components Knowledge and understanding: circuit, series, parallel, control, motor, chassis, connection, switch, spindle, fan, motor mounting clip
			Craftspeople	Yorvik museum
Summer	Textiles <i>T-shirts</i>	<p>Investigate, disassemble, evaluate</p> <ul style="list-style-type: none"> Collect and discuss a range of T shirts – Who are they for? How do you know? What are they made of? How have they been finished? Consider how designs deal with warmth, fit, appearance, practicality, function, cost and safety <p>Focused practical task</p> <ul style="list-style-type: none"> Discuss how patterns, templates are used to create garments and how stencils , dyeing, and embellishments are used to decorate them Practice sewing a button, sequins, braid, a pocket to a piece of fabric and stenciling a word by painting inside and around stencil <p>Design and make, evaluate</p> <ul style="list-style-type: none"> Discuss the design brief, identifying the user , their needs and the product’s purpose Create detailed drawings from a range of angles – front, back, sleeves , motif, logo Review design .during making process and evaluate final product against the brief 	Skills	<p>Marking out and cutting</p> <ul style="list-style-type: none"> Understand that designers must address a range of needs when designing clothing – warmth, fit, appearance, practicality, function, cost and safety <p>Fixing and joining</p> <ul style="list-style-type: none"> Use known skills e.g. applique,, cutting, embellishing, fabric gluing, stenciling and extend to include dyeing and machine sewing <p>Finishing</p> <ul style="list-style-type: none"> Distinguish between functional and decorative products
			Examples and vocabulary	<ul style="list-style-type: none"> Designing: specification, flow chart, mood board, mock up, user, swatches, working drawing Making: pattern/template Knowledge and understanding: seam, seam allowance, right side/wrong side, stitch, stitching, tacking, wadding, sewing machine, hem, pocket, zip, embellishment, logo, transfer, motif, graphics, lettering, tassels, sleeves, vest
			Craftspeople	Vivienne Westwood, Paul Frank, Iman Aldebe, Hana Tajima

3. Overview: Disciplinary Knowledge

	Marking out and cutting	Fixing and joining	Mechanisms and control	Finishing, including food hygiene
Y1	<ul style="list-style-type: none"> • Safe use of simple tools to punch to cut and make holes materials 	<ul style="list-style-type: none"> • Joining 2D and 3D materials- gluing , sticking, • Tying, fixing with split pins • Creating basic hinges • Creating levers and sliders • Understanding of structures and how these can be made stronger and more stable 	<ul style="list-style-type: none"> • Understanding simple mechanisms that allow movement – sliding mechanisms 	<ul style="list-style-type: none"> • Basic food handling, hygienic practices and personal hygiene, including how to control risks • Safe use of a variety of tools and equipment to peel, cut , grate, mix and mould food • The nutritional value of food stuffs in a balanced diet • Know about and apply basic finishing techniques e.g. collage, painting, colouring to match a design brief.
Y2	<ul style="list-style-type: none"> • Using templates and patterns on fabric, pinning, tracing around outline of component parts . Experimenting with using a template to draw and cut out 2 identical shapes • Applying basic measuring skills • Cutting fabric with precision • Use of simple models e.g. base kits/use of nets to plan out use of space or a structure might be marked out in order to be made 	<ul style="list-style-type: none"> • Developing basic sewing techniques – starting, ending, running stitch to join fabric • Developing a range of techniques for joining fabric- lacing, stitching, stapling, gluing, taping • Joining wheels and axels 	<ul style="list-style-type: none"> • Understanding simple mechanisms that allow movement - winding mechanisms 	<ul style="list-style-type: none"> • Know about and apply different finishing techniques – collage, paint, cut out shapes, computer generated images to match a design brief.

3. Overview: Disciplinary Knowledge

	Marking out and cutting	Fixing and joining	Mechanisms and control	Finishing, including food hygiene
Y3	<ul style="list-style-type: none"> Work safely with a range of hand tools incl junior hacksaw 	<ul style="list-style-type: none"> Extend understanding of ways of fixing and joining components and selecting most appropriate for a given task Understanding how to make stable structures - rolling, folding, and layering, reinforcing corners, cutting a mitre joint 	<ul style="list-style-type: none"> Understanding how pneumatic systems work Revising how simple levers work 	<ul style="list-style-type: none"> Know about and apply different finishing techniques –collage, paint, cut out shapes, decoupage, varnishing for durability. Understanding of food preparation techniques(tearing, cutting, slicing, grating) and ways of combining foods to make a product for a particular purpose Combining foods on the basis of taste, appearance and texture Understanding of different food groups within a healthy and balanced diet
Y4	<ul style="list-style-type: none"> Measuring accurately, marking out, cutting, folding, scoring, Using patterns and templates with more than 2 pieces 	<ul style="list-style-type: none"> Relate a mechanism to its purpose and select for a desired type of movement Joining and reinforcing fabrics Demonstrating fabric can be joined in a number of different ways – sewing using a range of stitches 	<ul style="list-style-type: none"> Understanding linkage mechanisms and the type of movement they produce Applying knowledge about electrical circuits in designing and making products 	<ul style="list-style-type: none"> Understanding what makes a quality finish- collage, printing, drawing, use of font, size, colour, layout . Using a widening range of decorative techniques such as dyeing and embroidery, embellishing, applique, fabric paints, fastenings (buttons, buckles, press studs, hooks and eyes, Velcro, safety pins, zip, ties
Y5	<ul style="list-style-type: none"> Measuring accurately, marking out, cutting, folding, scoring, drilling and mounting structures Using a range of sharp tools safely – paper drill, hole punch 	<ul style="list-style-type: none"> Understanding how different materials can be reinforced for different purposes Assembling materials in temporary ways as a trial prior to finalizing design choices Cutting and joining component parts to a main structure 	<ul style="list-style-type: none"> Understanding how to control movement with a cam mechanism 	<ul style="list-style-type: none"> Selecting appropriate methods and resources for finishing a design that reflect the intended use, cultural, geographical or historical influences Accurate measuring and weighing skills, understanding that the properties and quantities of ingredients will affect the final product Increased awareness of food safety and hygiene, including the use of ovens Exploring the functions and properties of ingredients
Y6	<ul style="list-style-type: none"> Making accurate patterns and templates Using a range of tool and techniques for marking out, measuring and cutting a range of sheet materials, wood, plastic, fabric 	<ul style="list-style-type: none"> Knowing that structures can fail when loaded Knowing how to reinforce structures and to research info about this from a range of sources Using a variety of temporary and permanent joining techniques, including framework, materials and textiles. Assembling components to make working models Using known skills e.g. applique,, cutting, embellishing, fabric gluing, stenciling and extend to include dyeing and machine sewing 	<ul style="list-style-type: none"> Understanding how products can be driven by electricity Understanding of how to control speed and direction Understanding how different sorts of switches can be used to control electrical current 	<ul style="list-style-type: none"> Developing a structure with finishing techniques including cladding Distinguish between functional and decorative products

3. Overview: Vertical concepts

	Investigate, disassemble, evaluate	Focused practical task	Design and make, evaluate
Y1	<ul style="list-style-type: none"> Examine and name a range of products, handle and smell them, sketch and label Consider how the way one part moves/works affects other parts of the product Compare two contrasting products, explain key terms and use sensory vocab to describe Introduce levers and sliders and how they make parts move Show examples of how mechanisms work and introduce key vocabulary Evaluate existing products to determine which is best and why classify products according to colour, texture, taste, where grown, how they are eaten Conduct local area walk/visit , sketching and discussion around different types of structures and how space is enclosed 	<ul style="list-style-type: none"> Discuss food hygiene practices Name and demonstrate use of simple tools Survey favourite products and represent in bar chart Test and categorise products – e.g by taste Discuss how designers use models to develop and communicate their ideas Build rectangular frames using construction kits and explore ways of making them more stable e.g. a wider base, adding further parts Explore simple mechanisms and levers using strips of card and construction kits Explore ways of stiffening strips of card using pipe cleaners, straws. 	<ul style="list-style-type: none"> Making design choices based on the properties of different materials to make a produce for a particular occasion or user Making clear labelled drawings to communicate design ideas Evaluating the final product against the design brief
Y2	<ul style="list-style-type: none"> Examine a range of products – what are they made of?, how are they out together? What has been added? Who are they for? How well made are they? Draw and label, rate an example of a given product Discuss and list different types of vehicles and their features – why do vehicles have wheels? Are they all the same size? How many? Why are vehicles different shapes? Why do some have parts that move/light up?. Identify parts of vehicles – wheel, axels, chassis, body, cab Look at images/video of component parts of a space suit Discuss types of fabric used and their properties 	<ul style="list-style-type: none"> Explore simple ways to add features to bring products(puppets) to life/understand how a user would interact with a product Look at pictures in books and magazines and sort products into Venn Diagrams based on parts identified Become familiar with paint or draw software package 	<ul style="list-style-type: none"> Making design choices based on the properties of different materials to make a produce for a particular occasion or user Making clear labelled drawings to communicate design ideas Evaluating the final product against the design brief

3. Overview: Vertical concepts

	Investigate, disassemble, evaluate	Focused practical task	Design and make, evaluate
Y3	<ul style="list-style-type: none"> Investigate free standing items – why is it important they are stable? How does this relate to their purpose? Would they work if they were not strong and stable? Consider how photo frames stand up, look at range of examples Consider design features relating to a product's purpose . Identify component parts and label drawings Look at objects that use air to make them work & demonstrate simple pneumatic systems with a balloon and tubing, x2 syringes Understand the 'balanced plate' model of food groups, name the groups Look at a range of packaged products and evaluate appearance, taste, smell, texture Survey the most popular choice and consider reasons for choices made, display results in range of charts/tables 	<ul style="list-style-type: none"> Use construction kit to investigate building stable structures Make free standing frame shape from pipe cleaners and a sheet of card/paper Explore making a pneumatic system with either balloons or syringes and tubing Revise making hinges Practise using knife to cut and slice Use a grater safely and correctly 	<ul style="list-style-type: none"> Making design choices based on the properties of different materials to make a produce for a particular occasion or user Making clear and precise labelled drawings to communicate design ideas Developing design proposals and ways to proceed Consider the limitations on scale and scope of design ideas Evaluating the final product against the design brief
Y4	<ul style="list-style-type: none"> Look at pop up books and greetings cards with pop ups and moving parts – spinners, levers, tabs, sliders. How do the parts move? What are the mechanisms and how do they work? Number of parts? How are parts joined? What is the impact made? Look at layout, size, font used for text and how pictures, colour has been used? Look at a collection of purses, wallets and belt bags. Consider the seams, seam allowance, fastenings and identify key parts – gusset, strap, hem. What sort of fabric is used? How does this relate to its purpose? How is it reinforced? Who is it used by? Discuss examples of alarm systems – when and where they are used and what for. Discuss dangers of mains electricity Look at and take apart a range of commercially produced switches which work in different ways – slide, reed, tilt, push to make, push to break 	<ul style="list-style-type: none"> Model different types of mechanism using paper/card, split pins, paper clips, drawing pins Practise running stitch, back stitch, starting and finishing, weaving and knitting on pieces of fabric – Which is strongest and why? Discuss the properties of different types of fabric and select one suitable for the task Practise with different types of fastening and select one suitable for the task Experiment with producing circuits that are triggered in some way e.g. someone treading on something or lifting something, including using a computer programme Discuss the idea of 'feedback' in an alarm system e.g. motion sensors trigger bell to ring 	<ul style="list-style-type: none"> Making design choices based on the properties of different materials to make a produce for a particular occasion or user Making clear and precise labelled drawings to communicate design ideas Begin to develop alternative ideas, using drawings, plans and models and make choices between them Evaluating the final product against the design brief

3. Overview: Vertical concepts

	Investigate, disassemble, evaluate	Focused practical task	Design and make, evaluate
Y5	<ul style="list-style-type: none"> Discuss a range of products (musical instruments/bread) – what are they made of ? What is the structure (solid or hollow), does it have a box/stem/arm? What part makes the noise? Which parts need to be strong? How can the sounds be varied? Why are instruments/food stuffs so important to different cultures? Listen to the sounds they make/music from different cultures showcasing the different instruments, discuss taste, ingredients, texture Survey product preferences in different user groups and select method of recording and displaying results that is appropriate to the task Investigate toys with cams – which parts turn, move and how are the parts attached? Look at the decoration around the mechanism Make models using construction kits and consider the use of a specific mechanism (cam) Understand how bread fits into the concept of a balanced diet 	<ul style="list-style-type: none"> Experiment with making sounds using a range of containers and other resources that can be combined to create shakers, scrapers, strings, drums Discuss the properties of the material, how they can be strengthened and the sounds made when they are combined Try assembling different shaped cams using card and split pins and observe their movement- how does it change depending on the shape of the cam? Discuss and demonstrate safety aspects of using a bench hook, Gcramp and drill Demonstrate need to measure accurately when mounting the mechanism, how to keep cam in place and how to use a wheel to make a handle Experiment adding holes for fixings with opened out cardboard boxes Experiment with different types of flour and adding different ingredients to bread dough – raisins, choc chips. Try shaping dough and adding different toppings, e.g. seeds 	<ul style="list-style-type: none"> Understanding the working characteristics of materials and how this links to the product’s intended purpose , selecting appropriately Beginning to make choices about the way design ideas are presented, creating own design specifications Begin to develop alternative ideas, using drawings, plans and models and make choices between them Reviewing and adjusting design ideas mid process Planning ahead, anticipating future actions e.g. using nets to pre drill holes Evaluating the final product against the design brief
Y6	<ul style="list-style-type: none"> Investigate a range of structures – What materials used? Why? How have they been used? What do the different parts do? Which structures are the strongest? Research structure of aqueducts – produce labelled drawings Experiment with controllable vehicles and consider – Where does the power come from? Compare similarities and differences How are the models constructed and component parts joined together? Draw and label diagrams from a range of angles (include example of an airboat) Collect and discuss a range of T shirts – Who are they for? How do you know? What are they made of? How have they been finished? Consider how designs deal with warmth, fit, appearance, practicality, function, cost and safety 	<ul style="list-style-type: none"> Investigate strengthening a square structure with diagonals and triangles, test Experiment with ways of joining materials-plastic, paper, wood , fabric Investigate a range of switches and how they work – build examples Investigate using a motor to power a fan – how can this produce forward motion? Experiment with paper, motors to create forward motion, how can we change speed and direction? Demonstrate the use of equipment, e.g. wire cutters,/strippers, mounting clips, connector strips Discuss how patterns, templates are used to create garments and how stencils , dyeing, and embellishments are used to decorate them Practice sewing a button, sequins, braid, a pocket to a piece of fabric and stenciling a word by painting inside and around stencil 	<ul style="list-style-type: none"> Producing several clear design ideas and working diagrams with step by step instructions and resources needed Draw and label diagrams from different view points to own design brief Understand that designers must address a range of needs when designing clothing – warmth, fit, appearance, practicality, function, cost and safety Begin to develop alternative ideas, using drawings, plans and models and make choices between them Reviewing and adjusting design ideas mid process Planning ahead, anticipating future actions e.g. using nets to pre drill holes Evaluating the final product against the design brief

