United Learning

Primary DT Curriculum

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Design and Technology

At the Victory Primary School, we intend for pupils to use creativity and imagination to design and make products that solve real and relevant

problems within a variety of contexts, considering their own and others' needs, wants and values. They will acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. They will learn to take risks, becoming resourceful, innovative. enterprising and capable citizens. Pupils will evaluate and develop a critical understanding of the impact of design and technology on daily life and the wider word. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

By the end of KS2, all pupils should be able to:

- Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- Critique, evaluate and test their ideas and products and the work of others
- Understand and apply the principles of nutrition and learn how to cook

Contents

Overview: Whole School

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn	**Cooking And Nutrition** Designing and making with food Understanding Health and nutrition Combining tastes and textures to make a product Using basic cutting tools Fruit Kebabs	**Textiles- Marking out and joining fabric** Making a textile product by marking out, cutting and joining fabric Finger puppets (animals)	**Free Standing Structures** Understanding ways in which structures can be made stable Understand how to stiffen materials Photo frame (as a present)	**Mechanisms - linkages** Understand how a range of linkage type mechanisms work Assemble a range of mechanisms including pop ups, spinners, sliders, levers and tabs And apply to the design of a pop up book Pop Up Book with moving parts (Guide To The Rainforest)	**Structures -Musical Instruments** Investigate instruments from different times and cultures Understand how shape and materials used can alter sound Investigate a range of finishing techniques Rainmaker	**Structures** Understand why structures sometimes fail Investigate and use techniques to reinforce and strengthen structures Design and make a structure for a specific tasks Design and build an aqueduct
Spring	**Static Structures** creating models from sheet and reclaimed materials Understand about basic structures and how they can be made stronger/more stable Use range of fixing techniques Castles	**Mechanisms – wheels, axels, pulleys and levers** joining materials with moving joints Understand how wheels and axels work Understand winding mechanisms Moving Vehicle (fire engine)	**Mechanisms and control - pneumatics** Consider different types of pneumatic structures Know about the movement of simple mechanisms , such as levers and linkages Moving Monster	**Textiles- reinforcing fabric** Investigate ways of reinforcing fabric –e.g. over stitching, running stitch Create and use a pattern Develop decorative techniques and fastenings e.g. applique Purse for the Rio carnival	**Mechanisms - Moving Toys using cams, wheels and axels** Understand how mechanisms can be used to produce movement Cut, shape and join components, selecting tools for a specific purpose Roman Moving Toy	**Mechanisms –Electrical and computer control** Understand how products can be driven by electricity Use motors to control speed and direction of movement Develop structures with cladding and finishing techniques – Viking longboat (airboat)
Summer	**Mechanisms – Pushes , pulls and levers** Understand simple mechanisms that create movement e.g. simple levers and sliders A book with moving parts (Transport)	**Textiles – using a paper pattern, joining fabric** Use a graphics programme to design a space suit Use a simple paper pattern to draw around and cut out fabric Use simple joining techniques Space suit for an Astronaut	**Cooking and Nutrition** Food preparation techniques Combining appearance, flavour and texture Understand the balanced plate model for healthy eating A Greek Salad	**Electrical Control** Draw on understanding of simple electrical circuits and switches Join components, cut and shape material with precision An alarm system for a precious artefact	**Cooking and Nutrition** Understand the function and properties of materials Identify, select and use food tools and techniques safely Understand food hygiene Making Bread	**Textiles** **Design for a range of needs – appearance, safety, size, warmth** **Use patterns, templates and detailed working drawings** **Develop finishing techniques** **T Shirts**

3. Overview: Year 1

	Substantive knowledge		Disciplinary knowledge	
Autumn	Cooking And Nutrition- Fruit kebabs	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 They can say where food comes from. They can identify healthy foods. They can describe the properties of food, ingredients; taste, smell, textures and consistency. Focused practical task Discuss food hygiene practices Name and demonstrate use of simple tools Survey favourite fruits and represent in bar chart Taste test Design and make, evaluate 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: Examples and vocabulary Craftspeople Local chef	F inishing skills, including food hygiene Basic food handling, hygienic practices and personal hygiene, including how to control risks They know that they have to wash their hands and keep work surfaces clean. Using a variety of tools and equipment safely to peel, cut , grate, mix and mould food The nutritional value of fruit in a balanced diet 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
Spring	Static structures- Castles	Investigate, disassemble, evaluate 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 Focused practical task Discuss how designers use models to develop and communicate their ideas and how their products are used within our world. Build rectangular frames using construction kits and explore ways of making them more stable e.g. a wider base, adding further parts They can explain what they are making. Design and make, evaluate 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 To describe how their product works. Evaluate their designs against the work of related designers.	Skills: Examples and vocabulary Craftspeople Local Architect	Marking out and cutting Use of scissors, snips and hole punching Make clear labelled drawings They can select tools and equipment to cut, shape, join and finish. They can choose the correct materials. They can use equipment safely and precisely. Fixing and joining Join 2D and 3D materials- gluing , sticking, tieing, fixing with split pins Experiment with creating hinges Finishing Collage, painting 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
Summer	Mechanisms-A book with moving parts	Investigate, disassemble, evaluate 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 Focused practical task Explore simple mechanisms and levers using strips of card and construction kits Explore ways of stiffening strips of card using pipe cleaners, straws. They can explain what they are making. Design and make, evaluate 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. To describe how their product works. Evaluate their designs against the work of related designers.	Skills Examples and vocabulary Craftspeople Jan Pienkowski David Pelham	Marking out and cutting : assemble strips of card to make levers and sliders They can select tools and equipment to cut, shape, join and finish. They can choose the correct materials. They can use equipment safely and precisely. Fixing and joining: Levers Finishing: collage, colouring 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

3. Overview: Year 2

	Substantive knowledge		Disciplinary knowledge	
Autumn	Textiles- Finger Puppets	Investigate, disassemble, evaluate Examine a range of finger puppets – 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 finger puppet Focused Practical Task: Explore simple ways to add features to bring puppets to life Design and make, evaluate 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 what they would do differently next time and explain why.	Skills Examples and vocabulary Craftsperson: J.Henson (Muppets)	Marking out and cutting: Make clear labelled drawings Using templates as a pre curser to pattern making. Experiment with using a template to draw and cut out 2 identical shapes Cutting fabric Fixing and joining: Joining fabric by sewing-Practice basic sewing techniques – starting, ending, running stitch 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
Spring	Mechanisms- vehicles Fire Engine	Investigate, disassemble, evaluate 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 Focused Practical Task Look at pictures in books and magazines and sort into Venn based on parts identified Design and make, evaluate Set design criteria- purpose – what is the vehicle designed for? Consider size of vehicle, type and size of wheels, set and record design criteria Identify tools and materials needed, including finishing materials and logos Set order for making Evaluate against design criteria what they would do differently next time and explain why.	Skills Examples and vocabulary Craftsperson- Local museum of transport	Marking out and cutting: Use of base kits/use of net for cuboid They can measure, mark out and cut fabrics and other materials. Fixing and joining: Try out different ways of making axel holders Mechanical and control skills: They can use mechanisms e.g. levers, sliders, axels and wheels. Join wheels and axels Finishing: Try out different finishing techniques –collage, paint, cut out shapes, computer generated images to match a design brief. Designing: purpose, user, use, explore, predict, size, shape, style, function, features- ladder, hose, siren, cab They can select materials and explain why they are being used depending upon their characteristics. Making: joining, combining, connecting, testing, attaching adding, changing They can join materials as part of a moving product e.g. sewing, rolling, folding, joining or by shape. Knowledge and Understanding: vehicle, wheels, chassis, axel, doweling, hole punch, logo, distance,
Summer	Textiles – A suit for an astronaut	investigate, disassemble, evaluate Look at images/video of component parts of a space suit Discuss types of fabric used and their properties Look at the work of related designers to see how their products are used within our world. Focused Practical Task Become familiar with paint or draw software package Design and make, evaluate 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 what they would do differently next time and explain why. .	Skills Examples and vocabulary Craftsperson- Amy Ross (NASSA)	Marking out and cutting Make clear labelled drawings Using paper patterns on fabric- pinning, tracing around outline of component parts Cutting with precision They can measure, mark out and cut fabrics and other materials. Using computer graphics drawing packages as part of the design process Fixing and joining: Fabric joining techniques – lacing, stitching, stapling, gluing, taping 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 They can select materials and explain why they are being used depending upon their characteristics. 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,

Overview: Year 3

	Substantive knowledge		Disciplinary knowledge	
Autumn	Free standing structures- photo frame	Investigate , disassemble, evaluate 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 Look at the work of related designers to see how their products are used within our world. Focused Practical Task 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 Design and make, evaluate 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 - what they would do differently next time and explain why.	Skills Examples and vocabulary Craftsperson – Visit to local Art Gallery	Marking out and cutting Developing ideas through precise and labelled drawings Use of a junior hacksaw Fixing and joining: Mitre joint Stiffening materials and making stable structures - rolling, folding, and layering, reinforcing corners To make holes and cuts accurately. Score and fold to shape materials accurately. Finishing Collage, painting, decoupage, varnishing for durability 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
Spring	Mechanisms and control. Pneumatics – Moving monsters	Investigate, disassemble, evaluate 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 Focused Practical task: Explore making a pneumatic system with either balloons or syringes and tubing Revise making hinges Design and make, evaluate 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 - what they would do differently next time and explain why.	Skills Examples and vocabulary Craftsperson- R.L.Stephenson (Rocket)	Marking out and cutting 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 Mechanical and control skills: Make and use a pneumatic system to make a model move Make and use simple levers. They can make a product that uses mechanical components Fixing and joining Extend understanding of ways of fixing and joining components and selecting most appropriate for a given task 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
Summer	Cooking and Nutrition – Greek Salad	Investigate, disassemble, evaluate 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 Focused Practical Task Practise using knife to cut and slice, grater safely and correctly. Design and make, evaluate Create design from specified range of ingredients for agreed user Set order for making Evaluate against design criteria	Skills Examples and vocabulary Craftsperson – Jamie Oliver, Vefa Alexiadou	Finishing skills, including food hygiene Food preparation techniques(tearing, cutting, slicing, grating) and ways of combining foods to make a product for a particular purpose They work in a safe and hygienic way. Combining foods on the basis of taste, appearance and texture Understanding of a healthy and balanced diet Understanding of food classes Marking out and cutting Use sharp tools correctly 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

Overview: Year 4

	Substantive knowledge		Disciplinary knowledge	
Autumn	Mechanisms Linkages	Investigate, dis assemble, evaluate 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. Focused Practical Task Model different types of mechanism using paper/card, split pins, paper clips, drawing pins Design and make, evaluate 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 their designs against the work of related designers.	Skills Examples and vocabulary Craftsperson-Matthew Rhinehart	Marking out and cutting Begin to develop alternative ideas, using drawings, plans and models and make choices between them Measuring accurately, marking out, cutting, folding, scoring, Fixing and joining: Understand linkage mechanisms and the type of movement they produce Relate a mechanism to its purpose and select for a desired type of movement Select the most appropriate materials, techniques and tools Finishing: collage, printing, drawing, use of font, size, colour, layout . Understand what makes a quality finish 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
Spring	Textiles Purse for Rio carnival	Investigate, dis assemble, evaluate 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? Describe the properties of materials. Focused Practical Task: 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 Design and make, evaluate 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 considering both their appearance and how it works.	Skills Examples and vocabulary Craftsperson –Jackie Gale	Marking out and cutting Using patterns and templates with more than 2 pieces Begin to develop alternative ideas, using drawings, plans and models and make choices between them Fixing and joining: Joining and reinforcing fabrics Demonstrate fabric can be joined in a number of different ways – sewing using a range of stitches for strength or visual appeal. Finishing: Use decorative techniques such as dyeing and embroidery, embellishing, applique, fabric paints, fastenings (buttons, buckles, press studs, hooks and eyes, Velcro, safety pins, zip, ties Designing: user, purpose, design criteria, alternatives, model, specification, stiffening, reinforcement Making: pattern, template, strength, support Knowledge and Understanding: fabric, fastening (and related types), compartment
Summer	Electrical control Alarms	Investigate, disassemble, evaluate 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 Focused Practical 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 Design and make, evaluate 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 Examples and vocabulary Craftsperson- School alarm system	Marking out and cutting Develop digital working proto types Mechanical and control skills Choose appropriate tools, equipment, materials, components and techniques. Understand simple electrical control. Understand how to use digital technology to produce simulations using a computer control programme – inputs and outputs, Make a product that has electrical components. Designing: digital proto type, communicate, model, Making: join, circuit, alarm, rectify, fault, test, adjust, modify, Kmowledge and Understanding: Feedback, input, output, LED, bulbs, buzzers, control

Overview: Year 5

	Substantive knowledge		Disciplinary knowledge	
Autumn	Structures – Musical Instruments	Investigate, dis assemble, evaluate 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. Focused Practical Task: 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 Design and make, evaluate: Identify a purpose for the instrument-eg 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 Examples and vocabulary Craftsperson – Local Music shop/concert hall, peripatetic music teacher	Marking out and cutting: 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 Fixing and joining: Understand how different materials can be reinforced for different purposes Assemble materials in temporary ways as a trial prior to finalizing design choices Finishing: Select appropriate methods and resources for finishing a design that reflect the intended use, cultural, geographical or historical influences Designing: investigate, plan, research, texture, intention, structure, outcome Making: mouldable materiel, adhesive, wood glue, shaping, cutting ,flexible, strong, pliable solid, hollow Knowledge and Understanding: sound, note, pitch, duration, dynamics, tempo, timbre, strengthen, reinforce,
Spring	Mechanisms- Moving toys (Roman siege machine)	Investigate, dis assemble, evaluate 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 qu) Focused Practical Task: 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, clamp 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 Design and make, evaluate: 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 Examples and vocabulary Craftsperson – the Toymakers Guild	Marking out and cutting: 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 Fixing and joining: Planning ahead, anticipating future actions e.g using nets to pre drill holes Cut and join parts to a main structure Apply their understanding of how to strengthen and combine materials, stiffen or reinforce structures. Mechanisms and control Understand how to control movement with a cam mechanism Use and understand mechanical systems in their products. e.g. gears, pulleys, levers and linkages Designing: sequence, annotated, diagram, sketch, storyboard, choice , decision, proto type, 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, axel, force, framework, shaft
Summer	Cooking and Nutrition Bread	Investigate, dis assemble, evaluate 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 Focused Practical Task: 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 Design and make, evaluate 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 Examples and vocabulary Craftsperson – Paul Hollywood, local bakery	Marking out and cutting: Create own design specification Finishing skills, including food hygiene 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 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

Overview: Year 6

	Substantive knowledge		Disciplinary knowledge	
Autumn	Structures- Aqueduct	Investigate, disassemble , evaluate 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 Look at the work of related designers to see how their products are used within our world. Focused Practical task: Investigate strengthening a square structure with diagonals and triangles, test Experiment with ways of joining materials-plastic, paper, wood , fabric Design and Make, evaluate 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 and the work of related designers.	Skills Examples and vocabulary Craftsperson – Sir Edward Leader Williams	Marling out and cutting Produce several clear design ideas with step by step instructions and resources needed Fixing and joining 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. 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
Spring	Mechanisms – controllable vehicle (Viking Longboat)	Investigate, disassemble, evaluate 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) Focused Practical task 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 Design and make , evaluate 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 and the work of related designers.	Skills Examples and vocabulary Craftsperson- Yorvik Museum	Marking out and cutting Draw and label diagrams from different view points Mechanical and control skills Understand how products can be driven by electricity Understand and use electrical systems in their products e.g. circuits, switches, bulbs, buzzers and motors. Control speed and direction Use different sorts of switches Fixing and joining: Assembling components to make working models Finishing Develop a structure with finishing techniques including cladding 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
Summer	Textiles T Shirts	Investigate, disassemble, evaluate 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 Focused Practical Task: 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 Design and make, evaluate. 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 and the work of related designers.	Skills Examples and vocabulary Craftsperson- Vivienne Westwood Paul Frank Iman Aldebe Hana Tajima	Marking out and cutting Understand that designers must address a range of needs when designing clothing – warmth, fit, appearance, practicality, function, cost and safety Fixing and joining: Use known skills e.g. applique, cutting, embellishing, fabric gluing, stenciling and extend to include dyeing and machine sewing Explore a range of stitch types and how they stiffen / strengthen their product Finishing: Distinguish between functional and decorative products 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