



Overview: Design and Technology

	Mechanisms	Food and Nutrition	Textiles	Structures	Electrical Circuits
EYFS <i>To include aspects of C&L and PSED</i>	Understanding the World: Use of small world vehicles, pulleys and resources that support understanding	Understanding the World/Mathematics/Physical Development: Exploring food safety and basic preparation methods e.g. weighing and measuring	Physical Development/Expressive Arts and Design: Opportunities to explore joining materials using temporary methods e.g. cutting and sticking	Physical Development /Mathematics/ Understanding the World/Expressive Arts and Design: Opportunities to build and create using a variety of materials	Understanding the World: Exploring light and dark
Year 1	Mechanisms – wheels and axles Purpose: To create a vehicle that can be used to show a teddy or toy around Sneinton			Structures – Build a castle tower Purpose: To create a freestanding castle using a variety of materials and joins for small world role play.	
Year 2	Mechanisms – Pop up story book Purpose: To create pop-up or moving parts book about the Great Fire of London.	Food and Nutrition – West African fruit salad Purpose: To create a fruit salad using fruit typically found in Sierra Leone or area with climate similar to Sierra Leone.	Textiles – Bag for life Purpose: To create a reusable bag for life		

Year 3		Food and Nutrition – Soups and Stews Purpose: To make a soup or stew that would provide nutrients for a Stone Age human.		Structures – Plant pot/box Purpose: To make a container/gift box/plant pot using recyclable materials.	
Year 4	Mechanisms – Levers and Linkages Purpose: To create a moving part information book about the Egyptians		Textiles – Viking purse Purpose: To make a purse/wallet for a Viking, using different sewing techniques and fastening types to join fabric		Electrical circuits – torch Purpose: To make a torch or light source using electrical circuits. To make a casing for a torch.
Year 5	Mechanisms – Space vehicle Purpose: To make a vehicle suitable to travel on different planets.	Food and Nutrition – Celebrating seasonality Purpose: To make a traditional Caribbean food – coco bread.	Textiles – Victorian bag Purpose: To make a bag/satchel appropriate for a Victorian school child.		
Year 6				Materials and Structures – Air raid shelter Purpose: To make a model of a safe air-raid shelter for civilians in WW2.	Electrical Circuits – Micro:bits Purpose: Using micro:bits to make an alarm for an artefact

Progression Map: Design and Technology

EYFS

	Design	Make	Evaluate
F1	Children will have opportunities and provision that allows them to develop an understanding of: • Mark making using a variety of media • Showing an interest in shape through construction • Talking about and exploring 2D shapes using mathematic language.	Provision provides children with opportunities to: • Play with blocks and shapes - builds towers. • Practise skills of cutting and sticking. Use new equipment like holepunch and stapler. • Use one handed equipment like tweezers or scissors to complete simple tasks • Use fine motor skills to complete tasks like gluing, bead threading and holding small objects. • Use modelling or construction to create a vehicle	Quality adult interactions will support children to: • Begin to talk about what they see, using a wide vocabulary. • Answer questions • Begin to talk about the differences between materials and changes they notice
F2	Children will have opportunities and provision that allows them to develop an understanding of: • Experiential experiences especially with food making and tasting encouraging children to clarify thinking, ideas and feelings. • Using new vocabulary in different contexts. • Focusing on how and why questions in experiential learning. • Exploring new vocabulary and understanding its meaning. • A variety of writing resources in continuous provision to support mark making and pencil grip when designing. • Role play which encourages design processes e.g. in a garage area children will draw and label a car	Provision provides children with opportunities to: • Use scissors to cut with developing accuracy, as a tool to make simple 2d and 3d objects. • Fasten using hole punches, split pins and treasury tags to make simple 2d shapes move. • Manipulate materials to achieve a planned effect. • Show independence, resilience and perseverance in the face of challenge. • Start to use knives to cut. • Holding pencil in tripod grip • Uses simple tools safely to effect changes to materials. • Using scissors to cut tape and paper to make objects • Understand how to stay safe when handling food e.g. washing hands, not touching face etc	Quality adult interactions will support children to: • Respond to others' ideas and feelings during continuous provision. • Explain their ideas and the process they used to create. • Answer questions and make predictions • Be confident to speak to others about their own opinions. • Take account of others' ideas and work together in collaboration. • Express what they like and do not like and why • Say what they like/dislike about their own creations

Progression Map: Design and Technology

Year 1

Project	Design	Make	Evaluate	Vocabulary / Resources
Structures – Build a castle tower Purpose: To create a freestanding castle using a variety of materials and joins for small world role play.	- To know how to draw upon their own experiences to help generate ideas against a set of simple criteria - To understand the development of existing structures e.g. What are they for? How do they work? What materials have been used? - To be able to suggest ideas and explain what they are going to do - To be able to begin to develop their ideas through talk and drawings	- To know how to build simple structures, exploring how they can be made stronger, stiffer and more stable - To know how to measure, mark out, cut and shape a range of materials with help - To be able to explore the use of different tools (scissors, hole punch, stapler) - To begin to know how to assemble, join and combine materials together using a variety of temporary methods (glue, masking tape, tape)	- To be able to talk about their design ideas and what they have made - To make simple judgements about their structure and ideas against set criteria e.g. how strong it is - To begin to suggest how their structure could be improved.	Vocabulary: Structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder design, make, evaluate, user, purpose, ideas, design criteria, product, function Resources: paper, card, plastic sheet, paper and plastic straws, pipe cleaners reclaimed materials including small containers, card boxes, cotton reels string, masking tape PVA glue, Plasticine, left/right handed scissors, hole punch, stapler
Mechanisms – wheels and axles Purpose: To create a vehicle that can be used to show a teddy or toy around Sneinton	- To know how to draw on their own experience of vehicles to help generate ideas - To understand how to identify a target group for what they intend to design and make - To know how to create a design brief, including a labelled drawing of their design.	- To explore and use mechanisms (wheels and axles) in their products - To explore the use of different materials - To know how to use simple tools (cutting mat, junior hacksaw, vice) - To know how to begin to assemble, join and combine materials and components together using a variety of temporary methods (dowel, plastic tubing, glue, masking tape, tape)	- To be able to talk about their design ideas and what they are making throughout - To begin to say what and who products are for, where products might be used and what materials they are made from and why - To suggest how their product could be improved.	Vocabulary: vehicle, wheel, axle, axle holder, body, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used design, make, evaluate, purpose, user, criteria, functional Resources: card, cotton reels, plastic tubing, dowel, straws, card discs, MDF wheels single hole punch, card drill, cutting mat, masking tape, PVA glue, junior hacksaw, vice, left/right handed scissors

Progression Map: Design and Technology

Year 2

Project	Design	Make	Evaluate	Vocabulary / Resources
Food and Nutrition – West African fruit salad Purpose: To create a fruit salad using fruit typically found in Sierra Leone or area with climate similar to Sierra Leone.	- To know how to generate ideas by drawing on their own and other people's experiences of different recipes - To understand how to identify a target group for what they intent to create based on a set design criteria	- To know how to begin to select the correct utensils, use correct vocabulary to name and describe them (chopping boards, knives, peelers, graters) - To know how to handle tools and foodstuff safely and appropriately - To choose fruit with purpose and prepare them with support	- To understand how to evaluate their recipe against their design criteria. - To be able to talk about their recipes, saying what they like and dislike about them.	Vocabulary: 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, planning, investigating tasting, Resources: range of fresh fruit and vegetables chopping boards, knives, peelers, graters, skewers, juicers, spoons, jugs, plates, bowls, aprons, plastic table covers, hand washing and washing-up facilities
Textiles – Bag for life Purpose: To create a reusable bag for life	- To know how to develop their design ideas through discussion, observation, drawing and modelling - To know how to identify a purpose for what they intend to design and make - To make templates and mock ups of their ideas in card and paper or material	- To select tools and materials, use correct vocabulary to name and describe them (fabric, thread, pins, needles) - To know how to measure to the nearest centimeter with support, cut and score with some accuracy - To know how to use basic sewing techniques – learn how to do a running stitch, how to start and end and how to thread a needle with support - To know how to shape textiles using templates	- To be able to look at a range of existing products explain what they like and dislike about their own product and why. - To talk about their ideas, saying what they like and dislike about them.	Vocabulary: tools, fabrics and components template, pattern pieces, mark out, join, decorate, finish features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function Resources: Hessian, plastic needles, cotton, design formats, a range of bags, ruler, scissors, templates,

Mechanisms – Pop up story book Purpose: To create pop-up or moving parts book about the Great Fire of London.	• To know how to explore resources through observation, trial and error • To know how to develop their ideas further through talk and drawings and label simple diagrams with support • To know what a pop-up book is and how it works	• To select tools and materials, use correct vocabulary to name and describe them (paper, masking tape, paper fasteners, paper binders, stick glue, PVA glue) • To know how to measure to the nearest centimetre, cut and score with some accuracy • To know how to assemble, join and combine materials in order to make a pop-up book • To use simple finishing techniques for their book	• To understand how to evaluate their books as they are developed, identifying strengths and possible changes they might make. • To talk about their final book, saying what they like and dislike about them and gathering feedback from a peer.	Vocabulary: slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join pull, push, up, down, straight, curve, forwards, backwards design, make, evaluate, user, purpose, ideas, design criteria, product, function Resources: card strips, card rectangles, paper, masking tape, paper fasteners, paper binders, stick glue, PVA glue, finishing materials and media
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Progression Map: Design and Technology

Year 3

Project	Design	Make	Evaluate	Vocabulary / Resources
Food and Nutrition – Soups and Stews Purpose: To make a soup or stew that would provide nutrients for a Stone Age human.	- To understand how to generate ideas for a recipe, considering its purpose and the user/s - To start to establish their own criteria for a successful recipe e.g. taste, texture and smell - To be able to explain their choice of ingredients. - To know how different ingredients are grown and sourced	- To identify different types of food that would work well in their recipe and explain why it has been chosen - To explain their choice of utensils and equipment in relation to the skill they will be using - To know how to work safely and accurately with a range of simple tools and utensils (knives, chopping board, induction hob, slow cooker, mixing bowl, wooden spoon)	- To know how to investigate and evaluate familiar products and consider the views of others to improve them e.g. taste testing - To understand how the key designs of individuals in cookery have helped shape the world. Which individuals/chefs etc? What changes? Jamie Oliver, impact on school dinners??	Vocabulary: 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 planning, design criteria, purpose, user, annotated sketch, sensory evaluations Resources: Recipe ingredients, knives, chopping boards, peelers, counter top induction hob, slow cooker, mixing bowl, wooden spoon, bowls or cups, spoons
Structures – Plant pot/box Purpose: To make a container/gift box/plant pot using recyclable materials.	- To know how to generate ideas for a plant pot, considering its purpose and the needs of the user, using CAD to create a design - To understand how well products have been designed, made, what materials have been used and the construction technique - To know whether products can be recycled or reused - To explain their choice of materials and components, including function and aesthetics	- To know how to select and use safely a wide range of tools and techniques for making their product (craft knife, cutting board, ruler, safety ruler, scissors, tape, glue) - To know how to measure to the nearest millimetre, mark out, cut, score, and assemble components with more accuracy (craft knife, cutting board, safety ruler, scissors) - To know how to finish the product to make it aesthetically pleasing	- To understand how to evaluate their product against original design criteria e.g. how well it meets its intended purpose. - To know how to gather and respond to peer feedback	Vocabulary: shell structure, three-dimensional (3D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating Resources: Recyclable materials (cardboard, plastic bottles, plastic bags, magazines), craft knife, cutting board, ruler, safety ruler, scissors, tape, glue

Progression Map: Design and Technology

Year 4

Project	Design	Make	Evaluate	Vocabulary / Resources
Mechanism – Levers and Linkages Purpose: To create a moving part information book about the Egyptians.	- To know how to confidently make labelled drawings from different views showing specific features, using their research of existing books using levers and linkages - To understand what has to be done, establishing a set of design criteria, planning how to use materials, equipment and processes and suggesting alternative methods of making, if the first attempts fail - To know how to explain their design brief including the materials used and intended outcome	- To know how to measure to the nearest millimetre, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques (cutting mat, scissors, craft knives, drill, paper fasteners) - To know how mechanical systems such as cams or pulleys or gears create movement - To know how to use finishing techniques to improve the appearance of their product using a range of equipment - To know the difference between fixed and loose pivots	- To know how to evaluate their products carrying out appropriate tests against a set of criteria. - To understand that they should evaluate their work both during and at the end of the project. - To know how to consider the views of others to improve their product.	Vocabulary: mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating user, purpose, function prototype, design criteria, innovative, appealing, design brief Resources: card strips, card rectangles, paper, masking tape, paper fasteners, paper binders, stick glue left/right handed scissors, cutting mats, card drill, finishing media and materials
Textiles – Viking purse Purpose: To make a purse/wallet for a Viking, using different sewing techniques and fastening types to join fabric	- To know what has to be done, planning how to use materials and joining techniques and suggesting alternative methods of making, if the first attempts fail - To consider the views of others, including intended users, to improve their work and create a design brief - To know how to explain their choice of materials and components according to function and aesthetic and the intended recipient	- To know how to plan the main stages of making, selecting a wide range of tools and techniques for making their product safely - To know how to measure to the nearest millimetre, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques - To know how to join and combine materials and components accurately in temporary and permanent ways including using a running stitch independently - To be able to demonstrate how to measure, tape or pin, cut and join fabric with some accuracy	- To know how to evaluate their products carrying out appropriate tests against their design criteria - To understand that they should evaluate their work both during and at the end of the project, gathering the views of others in a variety of ways e.g. digital feedback .	Vocabulary: fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label Resources: Fabric, thread, needles, pins, zips, buttons, purses and wallets, paper, measuring tape, fabric glue, tape, left/right handed scissors, needles, thread, tape, fabric glue, pins, measuring tape e.g. fabric paints, threads, appliqué pieces

Electrical circuits – torch Purpose: To make a torch or light source using electrical circuits. To make a casing for a torch.	• To know how to generate ideas, considering the purposes for which they are designing, using their research of existing products using electrical circuits • To know how to make labelled diagrams from different views showing specific features using TinkerCad • To explain their choice of materials and components according to function and aesthetic, including the casing	• To apply their knowledge of electrical circuits in Science to create circuits that fit the design brief • To know how to mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques • To understand how more complex, electrical circuits and components can be used to create functional products • To know how to use finishing techniques to improve the appearance of their product using a range of equipment	• To know how to evaluate their products carrying out appropriate tests e.g. dark room checks. • To understand that they should evaluate their work both during and at the end of the assignment, gathering feedback from others • To understand the key designs of individuals in design and technology and how they have helped shape the world. David Misell (inventor of the torch)	Vocabulary: series circuit, fault, connection, toggle switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, program, system, input device, purpose, function, prototype, design criteria, innovative, appealing, design brief Resources: switches including toggle, push-to-make and push to-break aluminium foil, paper fasteners, paper clips, card, corrugated plastic, reclaimed materials, bulbs, bulb holders, batteries, battery holders, wire, automatic wire strippers
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Progression Map: Design and Technology

Year 5

Project	Design	Make	Evaluate	Vocabulary / Resources
Food and Nutrition – Celebrating seasonality Purpose: To make a traditional Caribbean food – coco bread.	- To know how key chefs have influenced eating habits to promote varied and healthy diets - To understand how to use research and develop design criteria to inform the design of functional, appealing recipes that are fit for purpose - To understand how much recipes cost to make, how sustainable and innovative they are and the impact recipes have beyond their intended purpose e.g. supporting the cost of living, impact on lifestyle etc	- To know how to select appropriate utensils to prepare food safely and accurately - To select from and use a wider range of foods, according to their properties and aesthetic qualities - To know how to use skills using different tools and equipment safely and accurately with growing confidence - To understand how to use finishing techniques to improve the appearance of their recipe using a range of equipment.	- To know how to evaluate a recipe against the original design specification and by carrying out taste-tests - To be able to evaluate it personally and seek evaluation from others.	Vocabulary: ingredients, yeast, dough, flour, wholemeal, unleavened, baking soda, spice, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape Resources: information about food from around the world video clips of foods in the context of where they come from, food to taste, recipes to evaluate, weighing scales, measuring jugs, bowls, spoons – various sizes, baking trays, parchment paper, plastic film
Textiles – Victorian bag Purpose: To make a bag/satchel appropriate for a Victorian school child.	- To know how to set an authentic and meaningful design brief, generating ideas by carrying out research using e.g. surveys, interviews, questionnaires and the web. - To understand how much products cost to make, and how sustainable and innovative they are - To know how to develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design.	- To be able to select from and use a wider range of materials and components safely, according to their functional properties and aesthetic qualities - To work within the constraints of time, resources and cost - To understand how to use finishing techniques to improve the appearance of their product using a range of equipment including stitch designs and embellishments	- To know the key designs of individuals in design - To know how to test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. - To consider the views of others to improve their work (questionnaires to Y2)	Vocabulary: seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper Resources: existing textile products, reclaimed and reusable fabrics, pins, needles, thread, measuring tape, left/right handed fabric scissors, iron transfer paper, range of fastenings, materials for insulating or strengthening e.g. bubble wrap, wadding, interfacing

Mechanisms – Space vehicle Purpose: To make a vehicle suitable to travel on different planets.	• To know how to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, and prototypes including CAD • To understand how to use research and develop design criteria to inform the design of innovative, functional motor powered toys and vehicles that are fit for purpose	• To understand how mechanical systems such as cams or pulleys or gears can create movement • To know how to build a working circuit that includes a battery, switch and motor (include cutting and stripping wires) • To know how to use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.	• To be able to evaluate a product against the original design specification and by carrying out tests including weight bearing and movement. • To evaluate the effectiveness of their product against a set of criteria and seek evaluation from others. • To know the key works of individuals in design and know that technology has helped shape the world.	Vocabulary: mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating user, purpose, function prototype, design criteria, innovative, appealing, design brief Resources: batteries, battery holders, wires, crocodile clips, motors, switches, aluminium foil, paper fasteners, paper clips, card, motors, motor stands, dowel, paper, elastic bands junior hacksaws, glass paper, G-clamps, bench hooks, glue, s masking tape, dowel, double-sided tape
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Progression Map: Design and Technology

Year 6

Project	Design	Make	Evaluate	Vocabulary / Resources
Materials and Structures – Air raid shelter Purpose: To make a safe air-raid shelter for civilians in WW2.	- To know how to independently generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams and prototypes - To know how to draw up a specification for their design and pitch this to an audience - To be able to identify the strengths and areas for development in their ideas and products and plan for alternative methods if original plans are unsuccessful	- To know how to confidently select and use appropriate tools, materials, components and techniques and use them - To know how to make modifications as they go along. - To know how to construct products using permanent joining techniques that withstand testing. - To know how to reinforce and strengthen a 3D framework.	- To know how to record their evaluations using detailed diagrams with labels. - To know how to evaluate against their original criteria and suggest ways that their product could be improved, based upon evidence from tests and research.	Vocabulary: frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional Resources: card, paper straws, newspaper, square sectioned wood (dowel), masking tape, PVA glue pencils, rulers, right/left handed scissors, bench hooks, G-clamp, junior hacksaws, glass paper
Electrical Circuits Purpose: Using micro:bits to make an alarm for an artefact	- To understand how to use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose - To know why and how micro:bits are used and explore their use in different contexts - To know how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose, including the impact upon the environment	- To know how to assemble components to make working models, drawing upon understanding from Science and Computing. - To know how to make modifications as they go along. . - To know how to reinforce and strengthen a 3D product to withstand a drop from height. - To know how more complex electrical circuits and components can be used to create functional products. - To understand that mechanical and electrical systems have an input, process and output.	- To know how to record their evaluations using detailed diagrams with labels. - To know how to evaluate against their original criteria and suggest ways that their product could be improved based upon evidence from their testing	Vocabulary: series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart function, innovative, design specification, design brief, user, purpose Resources: micro:bits, light dependent resistors (LDRs), wire, automatic wire strippers, masking tape, construction materials