DT at Holbeton Primary School

Intent

At Holbeton Primary, we aim for all pupils to develop as young designers and we achieve this by recognising and planning for the skills future technology will require. We inspire our pupils by providing opportunities to be creative in order to develop a sense of interest and enthusiasm for Deign and technology. We aim to do this through a curriculum which is designed to ensure that all pupils are given the opportunity to develop their knowledge and skills through the specific disciplines of textiles, structures, mechanisms, electronical systems, and food.

Implementation

Design Technology follows the objectives of the National Curriculum. An enquiry approach is used as the basis for the delivery of Design and technology throughout the school.

The 'Projects on a Page' scheme of work is used to structure the planning, teaching and formative assessment of Design and technology. Lessons consist of Investigative and Evaluative Activities (IEAs) where children learn from a range of existing products and find out about Design and technology in the wider world; Focused Tasks (FTs) where they are taught specific technical knowledge, designing skills and making skills; Design, Make and Evaluate Assignment (DMEA) where children are expected to apply the 6 main principles of Design and technology: • Intended user • Purpose of product • Functionality • Design decisions • Innovation. • Authenticity

Our teaching and learning in Design and technology, is interactive and practical. Food technology is implemented across the school with children developing an understanding of where food comes from, the importance of a varied and healthy diet and how to prepare this. We provide varied and differentiated ways for pupils to achieve the final outcomes of their work. Only in this way will knowledge and skills become embedded and 'sticky' and ensure that our pupils can build on what they know and understand from one year to the next.

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Year group:	Autumn	Spring	Summer
EYFS	Textiles: Simple Joining techniques and decorating	Structures: Castles, towers and pirate ships Mechanisms: draw bridges	Food: fruit kebabs
	Continuous provision: Staples, Split pins, Masking tape, Pipe cleaners, Large construction outside for bridge building. Food: toast, bread, soup, pancakes		
Year 1/2 Cycle A	Textiles: Templates and joining (Christmas bauble)	Mechanisms: Wheels and Axels (car for an egg)	Food: Fruit and veg (kebab)
Year 1/2 Cycle B	Structure: Free Standing structures (fairy Tale/Bridges)	Mechanisms: Levers and sliders (Christmas/Nativity scene)	Food: Fruit and veg (pasta salad)
Year 3/4 Cycle A	Structures: Shell structures (Biscuit box)	Mechanisms: Levers and linkages (Moving Poster)	Food: Healthy and varied diet (sandwich/wrap)
Year 3/4 Cycle A	Textiles: 2D to 3D products (bag)	Electrical Systems: Simple circuits and switches (Lamp)	Food: Healthy and varied diet (vegetable soup)
Year 5/6 Cycle A	Structures: Frame structures (Tipi)	Mechanisms: Pulleys and gears (Victorian toy)	Food: Cultures (Greek Meze)
Year 5/6 Cycle B	Textiles: Combining fabric shapes (pencil case)	Electrical Systems: Robotics (Crumble) (robot)	Food: Seasonality (pizza)

Projects on a Page

	Year 1 — Wheels and axles	Year 2 - Sliders and levers	Year 3 - Levers and Linkages	Year 5 - Pulleys and gears
Mechanisms	Prior learning • Assembled vehicles with moving wheels using construction kits • Explore moving vehicles through play • Gained some experience of designing, making and evaluating products for a specified user and purpose. • Developed some cutting, joining and finishing skills with card.	Prior learning • Early experiences of working with paper and card to make simple flaps and hinges. • Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape.	Prior learning • Explored and used mechanisms such as flaps, sliders and levers • Gained experience of basic cutting, joining and finishing techniques with paper and card.	Prior learning • Experience of axles, axle holders and wheels that are fixed or free moving. • Basic understanding of electrical circuits, simple switches and components. • Experience of cutting and joining techniques with a range of materials including card, plastic and wood. • An understanding of how to strengthen and stiffen structures.
	Designing • Generate initial ideas and simple design criteria through talking and using own experiences as a class. • Develop and communicate ideas through drawings.	Designing • Generate ideas based on simple design criteria and their own experiences, explaining what they could make with a partner. • Develop, model and communicate their ideas through drawings and mock-ups with card and paper.	Designing • Generate realistic ideas and their own design criteria through discussion with a partner, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas.	Designing • Generate innovative ideas by carrying out research using surveys, interviews or questionnaires • Develop a simple design specification to guide their own thinking. • Develop and communicate ideas through discussion, annotated drawings and drawings from different views.
	Making • Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing • Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.	Making • Plan by suggesting what to do next. • Select and use tools, explaining their choices, to cut, shape and join paper and card .• Use simple finishing techniques suitable for the product they are creating.	Making • Order the main stages of making. • Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. • Select from and use finishing techniques suitable for the product they are creating.	Making • Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, allocate tasks within a team • Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost.

	Evaluating • Explore and evaluate a range of products with wheels and axles. • Evaluate their ideas throughout and their products against original criteria.	Evaluating • Explore a range of existing books and everyday products that use simple sliders and levers. • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.	Evaluating • Investigate and analyse books and, where available, other products with lever and linkage mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make.	Evaluating • Compare the final product to the original design specification • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work • Investigate famous manufacturing and engineering companies relevant to the project.
	Technical knowledge and understanding •Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the project	Technical knowledge and understanding • Explore and use sliders and levers .• Understand that different mechanisms produce different types of movement. • Know and use technical vocabulary relevant to the project.	Technical knowledge and understanding • Understand and use lever and linkage mechanisms .• Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project.	Technical knowledge and understanding • Understand that mechanical and electrical systems have an input, process and an output. • Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. •Know and use technical vocabulary relevant to the project.
	Key Vocabulary: vehicle, wheel, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism, names of tools, equipment and materials used design, make, evaluate, purpose,user, criteria, functional	Key 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	Key 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	Key Vocabulary: pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, mechanical system, electrical system, input, process, output, design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief
	Key indicators: Children can	Key indicators: Children can	Key indicators: Children can	Key indicators: Children can

	Year 2 — Free standing structures	Year 3 – Shell structures	Year 5 – Frame structures
Structures	Prior learning • Experience of using construction kits to build walls, towers and frameworks. • Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card. • Experience of different methods of joining card and paper.	Prior learning • Experience of using different joining, cutting and finishing techniques with paper and card. • A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.	Prior learning • Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials. • Basic understanding of what structures are and how they can be made stronger, stiffer and more stable.
	Designing • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through talking, and drawings.	Designing • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.	Designing • Carry out research into user needs and existing products, using interviews, questionnaires and web-based resources. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. • Generate, develop and model innovative ideas, through discussion, prototypes, annotated sketches or computer-aided design.
	Making • Plan by suggesting what to do next. • Select and use tools, skills and techniques, explaining their choices. • Select new and reclaimed materials and construction kits to build their structures. • Use simple finishing techniques suitable for the structure they are creating.	Making • Order the main stages of making. • Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. • Explain their choice of materials according to functional properties and aesthetic qualities. • Use finishing techniques suitable for the product they are creating.	Making • Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. • Use finishing and decorative techniques suitable for the product they are designing and making
	Evaluating • Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings. • Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.	Evaluating • Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. • Test and evaluate their own products against design criteria and the intended user and purpose.	Evaluating • Investigate and evaluate a range of existing frame structures. • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. • Research key events and individuals relevant to frame structures.

	Technical knowledge and understanding • Know how to make freestanding structures stronger, stiffer and more stable. • Know and use technical vocabulary relevant to the project.	Technical knowledge and understanding • Develop and use knowledge of how to construct strong, stiff shell structures. • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. • Know and use technical vocabulary relevant to the project.	Technical knowledge and understanding • Understand how to strengthen, stiffen and reinforce3-D frameworks. • Know and use technical vocabulary relevant to the project
	Key Vocabulary: cut, fold, join, fix 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	Key Vocabulary: shell structure, three-dimensional (3-D) 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 font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype	Key Vocabulary: Frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional
	Key indicators: Children can	Key indicators: Children can	Key indicators: Children can

	Year 1 – Templates and joining	Year 4 – 2D shape to 3D product	Year 6 – Combining different fabric shapes
Textiles	Prior learning • Explored and used different fabrics • Thought about the user and purpose of products	Prior learning • Have joined fabric in simple ways by gluing and stitching. • Have used simple patterns and templates for marking out. • Have evaluated a range of textile products • Have explored nets to 3D shape (Structures unit)	Prior learning • Experience of basic stitching, joining textiles and finishing techniques. • Experience of making and using simple pattern pieces.
	Designing • Design a functional and appealing product for a chosen user and purpose based on a given simple design criteria. • Generate, develop, model and communicate their ideas as appropriate through talking, drawing and templates	Designing • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. • Produce annotated sketches, prototypes, final product sketches and pattern pieces.	Designing • Generate innovative ideas by carrying out research including surveys and web-based resources • Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.
	Making • Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. • Select from and use textiles according to their characteristics.	Making • Plan the main stages of making. • Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing • Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.	Making • Produce detailed lists of equipment and fabrics relevant to their tasks • Formulate step-by-step plans • Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost
	Evaluating • Explore and evaluate a range of existing textile products relevant to the project being undertaken .• Evaluate their ideas throughout and their final products against original design criteria.	Evaluating • Investigate a range of 3-D textile products relevant to the project. • Test their product against the original design criteria and with the intended user. • Take into account others' views. • Understand how a key event/individual has influenced the development of the chosen product and/or fabric.	Evaluating • Investigate and analyse textile products linked to their final product • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work.

	Technical knowledge and understanding • Understand how simple 3-D textile products are made, using a template to create two identical shapes. • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. • Know and use technical vocabulary relevant to the project.	Technical knowledge and understanding • Know how to strengthen, stiffen and reinforce existing fabrics. • Understand how to securely join two pieces of fabric together. • Understand the need for patterns and seam allowances • Know and use technical vocabulary relevant to the project.	Technical knowledge and understanding • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate.
	Key Vocabulary: names of existing products, joining and finishing techniques, 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	Key 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, drawing, aesthetics, function, pattern pieces	Key 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, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype
	Key indicators: Children can	Key indicators: Children can	Key indicators: Children can

	Year 4 – Simple circuits and switches	Year 6 — Robotics
Electrical systems	Prior learning • Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers. • Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.	Prior learning • Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product. • Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a program to make a light flash on and off. • Experience of stable frame structures
	Designing • Gather information about needs and wants, and as a class develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional diagrams in groups.	Designing • Use research to develop a design specification for a functional product that responds automatically. Take account of constraints including time, resources and cost. • Generate and develop innovative ideas and share and clarify these through discussion. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.
	Making • Order the main stages of making as a group. • Select from and use tools and equipment to cut, shape, join and finish with some accuracy as a group. • Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities as a group.	Making • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components, allocating jobs. • Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. • Create and modify a computer control program to enable an electrical product to work automatically
	Evaluating • Investigate and analyse a range of existing battery-powered products. • Evaluate their ideas and products against their design criteria and identify the strengths and areas for improvement in their group work.	Evaluating • Continually evaluate and modify the working features of the product to match the initial design specification. • Test the system to demonstrate its effectiveness for the intended user and purpose. • Investigate famous inventors who developed ground-breaking electrical systems and components.
	Technical knowledge and understanding • Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. • Know and use technical vocabulary relevant to the project.	Technical knowledge and understanding • Understand and use electrical systems in their products. • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to the project.

	Key Vocabulary: series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device, user, purpose, function, prototype, design criteria, innovative, appealing, design brief	Key Vocabulary: series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flow chart, function, innovative, design specification, design brief, user, purpose
	Key indicators: Children can	Key indicators: Children can

	Years 1 & 2 — Fruit and vegetables	Years 3 & 4 – Healthy and varied diet	Years 5 & 6 – Celebrating culture (Yr5) and seasonality (Yr6)
Food	Prior learning • Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell. • Experience of cutting soft fruit and vegetables using appropriate utensils.	Prior learning • Know some ways to prepare ingredients safely and hygienically. • Have some basic knowledge and understanding about healthy eating and The eatwell plate. • Have used some equipment and utensils and prepared and combined ingredients to make a product.	Prior learning • Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. • Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.
	Designing • Design appealing products for a particular user based on simple design criteria as a class (yr1) with a partner (yr2).. • Generate initial ideas and design criteria through investigating a variety of fruit and vegetables • Communicate these ideas through talk and drawings.	Designing • Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. • Use annotated sketches and appropriate information and communication technology (Yr4), such as web-based recipes, to develop and communicate ideas.	Designing • Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. • Use words, exploded diagrams and information and communication technology as appropriate to develop and communicate ideas.
	Making • Use simple utensils and equipment to e.g. cut, slice, squeeze, peel (Yr2) grate (Yr2) and chop (Yr2) safely. • Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.	Making • Plan the main stages of a recipe, listing ingredients, utensils and equipment as a class (Yr3) in pairs (Yr4). • Select and use appropriate utensils and equipment to prepare and combine ingredients. • Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.	Making • Write a step-by-step recipe, including a list of ingredients, equipment and utensils • Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. • Make, decorate and present the food product appropriately for the intended user and purpose.

	Evaluating • Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. • Evaluate ideas and finished products against design criteria, including intended user and purpose.	Evaluating • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.	Evaluating • Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements • Understand how key chefs have influenced eating habits to promote varied and healthy diets
	Technical knowledge and understanding • Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. (Yr1) • Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The eat well plate. (Yr2) • Know and use technical and sensory vocabulary relevant to the project.	Technical knowledge and understanding • Know how to use appropriate equipment and utensils to prepare and combine food. • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately.	Technical knowledge and understanding • Know how to use utensils and equipment including heat sources to prepare and cook food • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary
	Key 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, arranging, popular, design, evaluate, criteria	Key Vocabulary: name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations	Key Vocabulary: ingredients, yeast, dough, bran, flour ,whole meal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble, design specification, innovative, research, evaluate, design brief
	Key indicators: Children can	Key indicators: Children can	Key indicators: Children can