Design Technology - Progression of Knowledge and Skills

Intent (Aims)	All children will **design and make products** that solve **real and relevant problems** within a variety of contexts, considering their **own and others' needs, wants and values**. Through the **evaluation of past and present design and technology**, our intent is that children will develop a **critical understanding** of its impact on **daily life** and how it has helped **shape the world** we now live in.
Pedagogy (How?)	• Through the support of the Design and Technology Association (DATA) scheme, Projects on a Page, children will experience an array of different progressive and linkable skills and techniques over the course of a child's time at Haseltine Primary School. This ensures that children are constantly building upon previous learning and are able to expand their knowledge and understanding of problem solving, designing and constructing different products. • Children will complete 3 projects a year, either having one lesson a week over a term or a DT day to complete each project so children are fully immersed in the research-design-make-evaluate process. • Across key stage 1 and 2, children will be exposed to the five key areas of design and technology: food, mechanisms, textiles, electrical systems and structures. We have allowed flexibility for it to be covered and revisited over a two- year period to support children in gaining a deeper understanding of this knowledge. • Children are given a variety of real- life products to explore in great detail, expanding their knowledge of how they look and work, allowing children to evaluate products against their target market and purpose. • For each project, children follow the design-make and evaluate sequence, allowing children time to reflect upon their design and products and think of ways that they could be improved or adapted. Teachers support and model increasingly progressive evaluative skills to enable children to create products of a high-quality throughout school. • Children are given a design brief to put the need for the product in context. Where possible, teachers ensure that the brief is linked to another area of their learning or has relevance to the children to inspire their imagination and eagerness to create and problem solve. • Safety is explained and modelled at the start of and throughout each product including food hygiene instructions.

Design & Technology Skills Progression

Curriculum (What?)		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Understanding contexts, users and purposes	• share their creations explaining the processes they have used.	• work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment • state what products they are designing and making • say whether their products are for themselves or other users • describe what their products are for • say how their products will work • say how they will make their products suitable for their intended users • use simple design criteria to help develop their ideas		• work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment • describe the purpose of their products • indicate the design features of their products that will appeal to intended users • explain how particular parts of their products work • gather information about the needs and wants of particular individuals and groups • develop their own design criteria and use these to inform their ideas		• carry out research, using surveys, interviews, questionnaires and web-based resources • identify the needs, wants, preferences and values of particular individuals and groups • develop a simple design specification to guide their thinking	

	Generating, developing, modelling and communicating ideas		• generate ideas by drawing on their own experiences • use knowledge of existing products to help come up with ideas • develop and communicate ideas by talking and drawing • model ideas by exploring materials, components and construction kits and by making templates and mockups • use information and communication technology, where appropriate, to develop and communicate their ideas	• share and clarify ideas through discussion • model their ideas using prototypes and pattern pieces • use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas • use computer-aided design to develop and communicate their ideas	
				• generate realistic ideas, focusing on the needs of the user • make design decisions that take account of the availability of resources	• generate innovative ideas, drawing on research • make design decisions, taking account of constraints such as time, resources and cost

Make	Planning		• plan by suggesting what to do next • select from a range of tools and equipment, explaining their choices • select from a range of materials and components according to their characteristics	• select tools and equipment suitable for the task • explain their choice of tools and equipment in relation to the skills and techniques they will be using • select materials and components suitable for the task • explain their choice of materials and components according to functional properties and aesthetic qualities	
				• order the main stages of making	• produce appropriate lists of tools, equipment and materials that they need • formulate step-by-step plans as a guide to making
	Practical skills and techniques	• Safely use and explore a variety of materials with a purpose in mind.	• follow procedures for safety and hygiene • use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components • measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design	• follow procedures for safety and hygiene • use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components	
				• measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some accuracy • apply a range of finishing techniques, including those from art and design, with some accuracy	• accurately measure, mark out, cut and shape materials and components • accurately assemble, join and combine materials and components • accurately apply a range of finishing techniques, including those from art and design • use techniques that involve a number of steps • demonstrate resourcefulness when tackling practical problems

<table>
<tr><td rowspan="4">Evaluate</td><td rowspan="2">Own ideas and products</td><td rowspan="2">• talk about what they have made and how they went about it.</td><td rowspan="2">• talk about their design ideas and what they are making
• make simple judgements about their products and ideas against design criteria
• suggest how their products could be improved</td><td colspan="2">• identify the strengths and areas for development in their ideas and products
• consider the views of others, including intended users, to improve their work</td></tr>
<tr><td>• refer to their design criteria as they design and make
• use their design criteria to evaluate their completed products</td><td>• critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make
• evaluate their ideas and products against their original design specification</td></tr>
<tr><td>Existing products</td><td></td><td>Across KS1 pupils should explore:
• what products are
• who products are for
• what products are for
• how products work
• how products are used
• where products might be used
• what materials products are made from
• what they like and dislike about products</td><td colspan="2">Across KS2 pupils should investigate and analyse:
• how well products have been designed
• how well products have been made
• why materials have been chosen
• what methods of construction have been used
• how well products work
• how well products achieve their purposes
• how well products meet user needs and wants</td></tr>
<tr><td>Key events and individuals</td><td></td><td></td><td>• who designed and made the products
• where products were designed and made
• when products were designed and made
• whether products can be recycled or reused</td><td>• how much products cost to make
• how innovative products are
• how sustainable the materials in products are
• what impact products have beyond their intended purpose</td></tr>
<tr><td colspan="4">Across KS2 pupils should know:
• about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products</td></tr>
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Technical Knowledge	Making Product Work		Across KS1 pupils should know: • about the simple working characteristics of materials and components • about the movement of simple mechanisms such as levers, sliders, wheels and axles • how freestanding structures can be made stronger, stiffer and more stable • that a 3-D textiles product can be assembled from two identical fabric shapes • that food ingredients should be combined according to their sensory characteristics • the correct technical vocabulary for the projects they are undertaking	Across KS2 pupils should know: • how to use learning from science to help design and make products that work • how to use learning from mathematics to help design and make products that work • that materials have both functional properties and aesthetic qualities • that materials can be combined and mixed to create more useful characteristics • that mechanical and electrical systems have an input, process and output • the correct technical vocabulary for the projects they are undertaking • how mechanical systems such as levers and linkages or pneumatic systems create movement • how simple electrical circuits and components can be used to create functional products • how to program a computer to control their products • how to make strong, stiff shell structures • that a single fabric shape can be used to make a 3D textiles product • that food ingredients can be fresh, pre-cooked and processed	• how mechanical systems such as cams or pulleys or gears create movement • how more complex electrical circuits and components can be used to create functional products • how to program a computer to monitor changes in the environment and control their products • how to reinforce and strengthen a 3D framework • that a 3D textiles product can be made from a combination of fabric shapes • that a recipe can be adapted by adding or substituting one or more ingredients

Cooking and Nutrition	Where food comes from		• that all food comes from plants or animals • that food has to be farmed, grown elsewhere (e.g. home) or caught	• that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world	• that seasons may affect the food available • how food is processed into ingredients that can be eaten or used in cooking
	Food preparation, cooking and nutrition		• how to name and sort foods into the five groups in The eatwell plate • that everyone should eat at least five portions of fruit and vegetables every day • how to prepare simple dishes safely and hygienically, without using a heat source • how to use techniques such as cutting, peeling and grating	• how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking • that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the eatwell plate • that to be active and healthy, food and drink are needed to provide energy for the body	• that recipes can be adapted to change the appearance, taste, texture and aroma • that different food and drink contain different substances – nutrients, water and fibre – that are needed for health

FAIRLAWN & HASELTINE FEDERATION

Haseltine PRIMARY SCHOOL

Design Technology Unit Questions Progression

Curriculum (What?)	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Structures	Can I make 2D and 3D structures to express ideas?	• Can I design and make a model rocket using a freestanding structure? • Can I explore the features of a castle before using different materials to create them? • Can I build structure, exploring how to make it stronger, stiffer and more stable? • Can I with help, measure mark out, cut and shape a range of materials?		• Can I select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy? • Can I develop and use knowledge of how to construct strong, stiff shell structures? • Can I develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes?		• Can I research, plan, make and evaluate a design for a Victorian automaton? • Can I explore how different mechanisms work to make automata move? • Can I understand that mechanical systems have an input, process and an output? • Can I understand how cams can be used to produce different types of movement and change the direction of movement?	• Can I design and build an Anderson Shelter model, using a strong and stable frame structure? • Can I investigate different structures, how they were made and what shapes proved to be strong in architecture? • Can I build own prototype shelters out of different materials?
Textiles	Can I experiments with a range of media?		• Can I research, plan, make and evaluate a design? • Can I measure, mark and cut from different textiles • Can I understand how to join fabrics using different techniques e.g. running stitch,		• Can I research, plan, make and evaluate a design for a felt purse? • Can I accurately measure, cut and mark materials? • Can I understand how to securely join two pieces of fabric together?		• Can I research different cushions and their materials, exploring their functions, practicalities and USP? • Can I design and prototype a cushion? • Can I learn and use a variety of stitching

			glue, over stitch, stapling? • Can I explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons?		• Can I understand the need for patterns and seam allowances?		techniques to manufacture a cushion? • Can I understand that a 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics?
Mechanical Systems	Do I show an interest in technological toys with knobs or pulleys?	• Can I design and make a moving picture for a not so traditional tale? • Can I make decisions about the product design and use an annotated sketch to show ideas? • Can I explore and use mechanisms such as levers and sliders in order to make a picture move?	• Can I design and build a vehicle using wheels and axels and recycled junk materials? • Can I explore and use mechanisms, such as wheels and axels in the product? • Can I distinguish between fixed and freely moving axles?	• Can I research, plan, make and evaluate a design for a shadow puppet with at least one moving part? • Can I use folding and scoring to shape materials accurately? • Can I make cuts and holes accurately? • Can I understand how to use lever and linkage mechanisms?			
Electrical Systems	Do I understand that that electricity powers basic objects in the home?				• Can I create a switch to use in a torch design? • Can I connect simple electrical components and a battery in a series circuit to achieve a functional outcome? • Can I identify the main features of torches? • Can I understand and use computing to program and control products containing electrical	• Can I create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment? • Can I understand and use electrical systems in a product? • Can I apply understanding of computing to program, monitor and control products?	

					systems, such as series circuits incorporating switches, bulbs and buzzers?		
Food		• Can I explore where our food comes from? • Can I prepare food safely and hygienically? • Can I describe properties of food ingredients (e.g. taste, smell, texture and consistency)? • Can I understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell plate?	• Can I explore where our food comes from (with a focus on foods from the rainforest) e.g. farmed or grown at home? • Can I prepare food safely and hygienically? • Can I describe properties of food ingredients (e.g. taste, smell, texture and consistency)? • Can understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell plate?	• Can I understand how recipes can be changed? • Can I know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught?	• Can I know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught? • Can I understand how recipes can be varied? • Can I identify which foods and drinks consist of a healthy diet (Eatwell Plate)?	• Can I understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed? • Can I understand how to safely use utensils and equipment, including heat sources, to prepare and cook food? • Can I write a step-by-step recipe, including a list of ingredients, equipment and utensils?	• Can I safely use utensils and equipment, including heat sources, to prepare and cook food? • Can I understand about seasonality in relation to food products and the source of different food products? • Can I write a step-by-step recipe, including a list of ingredients, equipment and utensils?