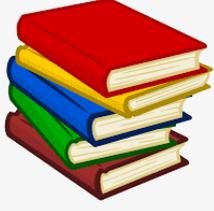
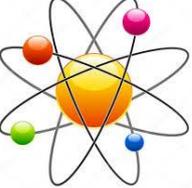




DESIGN AND TECHNOLOGY CURRICULUM POLICY 2021-22

			
English	Mathematics	Science	Religious Education
			
Relationships, Sex and Health Education	History	Geography	Languages
			
Music	Art and design	Design and technology	Computing
			
Physical Education	Personal, Social and Health Education		

Introduction

This policy sets out the principles on which we base our practice and reflects the requirements of the 2014 National Curriculum.

Policy development

This policy was developed by the design and technology (DT), in consultation with staff, pupils and governors.

Vision

At New Haw, our curriculum teaches children the creative, technical and practical expertise needed to perform everyday construction tasks confidently. Using their imagination, they will learn the skills and knowledge required to design and make authentic products that solve real and relevant problems within a variety of contexts, consider their own and others' needs, wants and values. Learning about food, nutrition and cookery in each year group will empower pupils to make positive food choices that underpin a healthy lifestyle. From starting with an initial idea, through to planning, making and the iterative cycle of evaluation and refinement, children will become proficient in all stages of technological development.

Pupils will be encouraged to take risks, leading them to become innovative young people. They will have opportunities to collaborate with others and share their thinking and, through the evaluation of design and technology, they will develop a critical understanding of its impact. They will learn to take a resourceful approach, showing awareness of local, national and global environmental and social issues, where relevant.

Our children are growing up in an increasingly complex and technical world and the Design and Technology curriculum will prepare them with the knowledge and skills necessary to understand it, and the passion to be a part of it.

Curriculum design

Curriculum Map

Unit Overview	Term 1	Term 2	Term 3
Year 3	Healthy smoothies	Hand puppets	Slingshot cars
Year 4	Healthy snacks	Bunting	Building a weather station
Year 5	Building bridges	Bread	Design a 'dream house' on CAD
Year 6	Steady hand game	Cooking a healthy meal	Designing with Microbit

Rationale

At New Haw, children study units in the design and technology curriculum in the key topic areas of textiles, mechanical systems, structures and/or electrical circuits. They learn to control and monitor products through computer programming. In addition, children complete one food and nutrition unit each year.

Because pupils meet these key topic areas more than once during key stage 2, knowledge is revisited and built upon as the level of technical complexity increases (see progression document). They learn an increasingly technical repertoire of subject-linked vocabulary. Key skills are consolidated and extended. In each year group, cross-curricular connections

are regularly made with other subjects, such as science, geography, mathematics, PSHE and computing, deepening learning further.

Each unit is organised around a similar structure:

Product analysis: Children investigate and analyse existing products on the market, linked to those that they will eventually make in their topic area. This will often involve analysing material choice, construction methods, functionality, aesthetic appeal and environmental viability. They might look at the development of a product over time, such as cars in Year 3, or children's games in Year 6. They sometimes learn about ground-breaking inventors, designers, engineers, chefs and manufacturers, who have shown innovation and furthered progress in the field.

The User: An individual is next identified as the user of a product and children gather information about their wants and needs. They learn how to devise and implement different methods for collecting this data, ranging from conducting surveys to holding interviews and making questionnaires.

Design and planning: Children then create their own design criteria, which states what their product has to do in order to be successful. Within this, the user's requirements ultimately guide their planning and construction. 'Focused practical tasks' are sometimes given to teach explicit knowledge and skills that children will require to succeed when making. During the iterative process of design and construction, children constantly review, reflect and evaluate strengths and areas for development. Thought leads to action which leads to further thought, as children overcome design challenges and find new opportunities to fulfil their design criteria. As children progress through key stage 2, they are taught to create more refined designs.

In Year 5, pupils gain experience of using computer-aided design software, thus becoming increasingly adept at drawing accurately and to scale. During the textile units, pattern pieces are created and in Years 5 and 6, prototypes are used to test and evaluate the form and function of their design ideas, before children create the final product.

Construction: As pupils progress further up the school, they independently use their acquired knowledge to select tools and equipment suitable for a task. They demonstrate increasing accuracy when measuring, marking out, cutting, shaping, assembling, joining, combining and applying finishing techniques. Through oral and written opportunities, they explain how their products work, using key subject terminology. They learn to articulate their choice of materials and components according to functional properties and aesthetic qualities.

Teaching rules of health and safety is integral to all practical tasks and children become increasingly confident at learning to assess and manage risk for themselves.

Evaluation: At the end of a unit, children critically evaluate the success of their product against its design criteria. They become increasingly proficient at understanding *where* improvements could be made, and importantly, *how* they could be made in future.

Assessing progress

At New Haw we have carefully considered what it means to 'get better' at Design and Technology. Please see the progression grids attached at Appendix A.

Assessment at New Haw is continuous. Low-stakes checks, for example, are built into many lessons to ensure that children know and remember more. Verbal and written teacher feedback is consistently given to aid reflection and understanding, and children are increasingly involved in evaluating their own work. In this way, students take ownership of

their progress and can see easily what they are doing well and what they need to do to improve.

Delivery

In all year groups, children are taught Design and Technology by a qualified teacher. At New Haw, teachers are provided with regular CPD opportunities, designed to increase their subject knowledge. They use a variety of teaching strategies, resources and stimuli in order to develop the children's knowledge in a way that is engaging, motivating and inspiring to pupils. Digital technologies are used wherever possible in order to enhance and develop the children's skills.

Enrichment

In order to enhance the children's understanding of possible future career paths in design and technology, we organise visitors to Year 6 who lead presentations about their jobs in related areas. We also ensure that our school assemblies incorporate opportunities to learn about key people who have made/are making vital contributions to the field, giving children the chance to learn about exciting events and landmark discoveries that have influenced, and are influencing, the world of design and technology today. In year 6, children have the opportunity to run a stall at the Christmas fair, with the aim of making the maximum amount of profit. Through this they learn about business modelling and entrepreneurialism.

Inclusion

At New Haw it is our belief that *all* children, including those with special educational needs and/or disabilities, are entitled to have full access to the school's rich curriculum. Our emphasis is on 'scaffolding up', rather than 'differentiating down'. Our ambition for pupils with SEND is the same as for their peers.

Teachers will carefully consider the ways in which they might reduce the barriers that pupils with specific needs may face in accessing the curriculum. They may, for example, consider in greater detail the building blocks of knowledge that specific pupils need to access the curriculum. They may also consider the most appropriate ways for specific pupils to learn aspects of the curriculum. This might include, for example, redesigning teaching materials, giving pupils more time to complete tasks etc. In addition, they will consider appropriate accessibility for educational trips and visits.

Monitoring impact

The DT coordinator, in conjunction with year teams, carries out regular monitoring of the subject, including pupil voice interviews, work-sampling, learning walks and lesson observations. Outcomes are presented at senior leadership meetings and identified key priorities form the basis of coordinator action plans. These then feed into the school development plan.

Coordinator

The DT coordinators at New Haw are Suzie Crosby and Olivia Drummond. New Haw Community School is currently a member of The Design and Technology Association.

Review

This policy was last reviewed on 5th July 2021, and will be reviewed again in summer 2022.

	KS1	Year 3	Year 4	Year 5	Year 6
Technical knowledge	<p>Know about the simple working characteristics of materials and components and the movement of simple mechanisms such as levers, sliders, wheels and axles</p> <p>Know that structures can be made stronger, stiffer and more stable.</p> <p>Know that 3-D textiles product can be assembled from two identical fabric shapes.</p> <p>Know that food ingredients should be combined according to their sensory characteristics.</p> <p>Know that the correct technical vocabulary for the projects they are undertaking.</p>	<p>Explain how the technical parts of their product work.</p> <p>Understand the terms aesthetic appeal and functional quality.</p> <p>Know how to combine components for a functional purpose.</p> <p>Know that mechanical and electrical systems have an input, process and output.</p> <p>Know that a 3D textiles product can be made from a combination of fabric shapes.</p> <p>Know that a recipe can be adapted by adding or substituting one or more ingredients.</p>	<p>Explain how the technical parts of their product work.</p> <p>Use the terms aesthetic appeal and functional quality.</p> <p>Know how to successfully combine components for a functional purpose and durable product.</p> <p>Know that mechanical and electrical systems have an input, process and output.</p> <p>how to program a computer to control their products.</p> <p>Know that a 3D textiles product can be made from a combination of fabric shapes.</p> <p>Know that a recipe can be adapted by adding or substituting one or more ingredients.</p>	<p>Explain how the technical parts of their product work.</p> <p>Use a wide range of vocabulary based around aesthetics and functionality.</p> <p>Know how to successfully combine components for a functional and durable product.</p> <p>Know that mechanical and electrical systems have an input, process and output.</p> <p>how mechanical systems such as gears, cams and pulleys create movement.</p> <p>Know that a recipe can be adapted by adding or substituting one or more ingredients.</p> <p>Know how to reinforce and strengthen a 3D framework</p>	<p>Explain how the technical parts of their product work.</p> <p>Use a wide range of vocabulary based around aesthetics and functionality.</p> <p>Know how to successfully combine components for a high quality functional and durable product.</p> <p>Know that mechanical and electrical systems have an input, process and output.</p> <p>Know how simple electrical circuits and components can be used to create functional products</p> <p>Program a computer to monitor changes in the environment and control their products</p> <p>Know that a recipe can be adapted by adding or substituting one or more ingredients</p>
Cooking and nutrition	<p>Know that all food comes from plants or animals; that food has to be farmed, grown elsewhere (e.g. home) or caught.</p> <p>Know how to name and sort foods into the five groups in the Eatwell Guide; that everyone should eat at least five portions of fruit and vegetables every day.</p> <p>Can prepare simple dishes safely and hygienically, without using a heat source</p> <p>Use techniques such as cutting, peeling and grating.</p>	<p>Know where ingredients are sourced from, how they are grown and the impact of seasonality.</p> <p>Demonstrate hygienic food preparation and storage.</p> <p>Understand how food is processed into a consumer product.</p> <p>Understand how their product relates to The Eatwell Plate.</p>	<p>Know where ingredients are sourced from, how they are grown and the impact of seasonality.</p> <p>Understand how food is processed into a consumer product.</p> <p>Understand how their product relates to the energy requirements of the body (e.g. protein).</p>	<p>Know where ingredients are sourced from, how they are grown and the impact of seasonality.</p> <p>Understand how food is processed into a consumer product.</p> <p>Understand how their product contains substances needed for health (e.g. nutrients, fibre).</p>	<p>Know where ingredients are sourced from, how they are grown and the impact of seasonality.</p> <p>Understand how food is processed into a consumer product.</p> <p>Understand how their product contains substances needed for health (e.g. nutrients, fibre).</p>

	Topics	Vocabulary											
		Early years:	Healthy Drinks	Hand puppets	Slingshot Car	Healthy snack bars	Bunting	Weather station	Bread making	Bridges	CAD Pencil holder	Healthy meals	(Junior Apprentice)
	Year 1: Year 2:	Healthy, Ingredients, Fruit, vegetables vitamin, taste/ texture/ looks/ smell mineral, obesity, product, preference market, consumer, customer, consistency , taste, target market, seasonal, chop, slice, hygiene, net, evaluation	decoration, purpose, running stitch, over stitch, cross stich, needle, material feature, stitch, sew thread, eye, knot, material, suitable, design, template, accuracy evaluate	aesthetic appeal, function.	carbohydrates, proteins, fats, sugars, taste/ texture/ appearance , equipment, exploded diagram, annotate, packaging, materials, purpose, font, dairy, improve, assess, reflection, food technology	evaluate product, bunting, existing, decorative, function, durable, attractive, theme, fabric, template, pattern, embellishments, running stitch, secure, oversew, binca, design criteria, generate, develop,	meteorologist weather temperature wind direction air pressure precipitation weather vane rain gauge	yeast, micro-organism, fermentation, reaction, germs, excrete, nutrients, prove, knead, rise	effective, bascule/ folding/curling/ vertical lift/ swing bridge, tourism, residential, recreation, commuters, triangulation stability, construction, compression, regular and irregular polygons, cross-brace, racking, prototype, bridge, specification	Computer-aided design 3D modelling 2D, 3D shapes Graphical objects Modify Select/ move/ delete/ resize/ group/ rotate/ combine/ lift/ position/ duplicate/ placeholder	mass production, retail market, construction, electrical circuit, components, lever, push/slide switch/ bulb/ connectors/ wires disconnect, electrical charge, voltage, 'Cost per unit', short circuit, rechargeable batteries, prototype, engagement adapt	Brief Initial design proposal Final design proposal Target market Projected profit Advertising	Unsaturated, saturated fat, balanced diet, calories, utensil, savoury, dietary restrictions, imports, food mileage, sustainability, bacteria, contaminate, hazards, recipe peel/ slice, dice/ blend, simmer/ tender, root vegetable green vegetable
Skills	Designing	<p>State what products they are designing and making Say whether products are for themselves / others Describe their products and how they work Use simple design criteria to help develop their 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 using ICT where appropriate. Model ideas by exploring materials, components and construction kits and by</p>	<p>Describe the purpose of their product and how it will appeal to their intended user. Gather information about the needs and wants of the intended user (includes initial taste testing of foods). Develop their own design criteria and use it to inform their ideas. Use annotated sketches to communicate their ideas. Generate realistic ideas, focusing on the needs of the user and availability of resources.</p>	<p>Describe the purpose of their product and how it will appeal to their intended user. Gather information about the needs and wants of the intended user and present this information. Develop their own design criteria and use it to inform their ideas.</p> <p>Model their ideas using pattern pieces when making textiles. Use annotated sketches and exploded diagrams to communicate their ideas. Generate realistic ideas, focusing on the needs of the user and availability of resources. Generate realistic ideas, focusing on the needs of the user and availability of resources.</p>	<p>Gather information about the needs and wants of the intended user (interview,) and choose how to communicate the data clearly. Describe the purpose of their product and how it will meet the needs, wants, preferences and values of the intended user. Model their ideas using prototypes and pattern pieces. Develop a more detailed design specification to prepare for making products, which may be negotiated and agreed between the pupil, as designer, and his or her end user. Use annotated sketches, exploded diagrams, cross sectional drawings and computer-aided design to communicate their ideas.</p>	<p>Gather information about the needs and wants of the intended user and choose how to communicate the data clearly (survey/questionnaires/web-based resources). Describe the purpose of their product and how it will meet the needs, wants, preferences and values of the intended user. Model their ideas using prototypes and pattern pieces. Develop a more detailed design specification to prepare for making products. Communicate their ideas using the most appropriate form they choose eg. annotated diagram, exploded diagram etc. Generate innovative ideas, taking account of time constraints, resources and cost.</p>							

	making templates and mock-ups.			Generate innovative ideas, taking account of time constraints, resources and cost.	
Making:					
Planning	Say how they will make their products . 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 suitable tools, equipment, materials and components and discuss why they have chosen them. Order the main stages of making.	Select suitable tools, equipment, materials and components and discuss why they have chosen them.	Select suitable tools, equipment, materials and components and discuss why they have chosen them. Formulate 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 techniques	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, shape and join materials and components.	Generate and follow health and safety procedures which includes food hygiene. Measure, mark out, cut, assemble and join materials with some accuracy. In sewing to measure, tape or pin, cut and join fabric with a running stitch with some accuracy. Apply finishing techniques for aesthetic appeal with some accuracy.	Generate and follow health and safety procedures. Measure, mark out, cut, assemble and join materials with some accuracy. Sew using a range of different stitches eg. running stitch, backstitch. When sewing, to measure, pin, cut and join fabric with increasing accuracy. Apply finishing techniques for aesthetic appeal with increasing accuracy.	Generate and follow health and safety procedures. Measure, mark out, cut, assemble and join materials with accuracy. Apply finishing techniques for aesthetic appeal with accuracy. Demonstrate resourcefulness when tackling practical problems.	Generate and follow health and safety procedures which include understanding how to avoid accidents in the kitchen Measure, mark out, cut, assemble and join materials with accuracy. Apply finishing techniques for aesthetic appeal with accuracy. Demonstrate resourcefulness when tackling practical problems.
Evaluating	Talk about their design ideas and what they are making Make simple judgements about their products and ideas against design criteria	Discuss how the ground-breaking products of key inventors, designers, engineers, chefs and manufacturers have shaped our world. Evaluate strengths and areas for development in ideas and products. Analyse how well products are designed and made; why materials are chosen; how well they work and achieve purpose; how well they meet users' needs. Investigate where/ when and how products are designed/ made and who did this. Investigate whether products can be recycled/ reused Consider the views of others and themselves when thinking about how to improve their work.	Investigate how the ground-breaking products of key inventors, designers, engineers, chefs and manufacturers have shaped our world. Evaluate strengths and areas for development in ideas and products Analyse how well products are designed and made; why materials are chosen; how well they work and achieve purpose; how well they meet users' needs. Investigate where/ when and how products are designed/ made and who did this. Investigate whether products can be recycled/ reused. Use their design criteria when evaluating their completed products. Consider views of others, including users to improve work, to include the redesign of a final product, taking into account these ideas.	Consider the consequences of the ground-breaking products of key inventors, designers, engineers, chefs and manufacturers and how they have shaped our world. Analyse how well products are designed and made; why materials are chosen; how well they work and achieve purpose; how well they meet users' needs. Investigate where/ when and how products are designed/ made and who did this. Investigate whether products can be recycled/ reused. Evaluate strengths and areas for development in ideas and products. Consider views of others, including users to improve work. Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make.	Analyse the wider implications of the ground-breaking products of key inventors, designers, engineers, chefs and manufacturers and how they have shaped our world. Analyse how well products are designed and made; why materials are chosen; how well they work and achieve purpose; how well they meet users' needs. Investigate where/ when and how products are designed/ made and who did this. Investigate whether products can be recycled/ reused. Investigate 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. Evaluate strengths and areas for development in ideas and products. Consider views of others, including users, to improve work. Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make.