Design Technology Curriculum Progression

What will our Design Technology learners be able to do when they leave us?

By the end of their time at West Dean C of E Primary school, our Year 6 Design Technology pupils will have developed a deep and broad knowledge of Design and technology as an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Curriculum Coverage (NC)

Aims

The national curriculum for design and technology aims to ensure that all pupils:

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

EYFS	KS1	KS2
<u>Expressive Arts and Design</u>: Creating with materials: safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations, explaining the process they have used. <u>Physical Development:</u> Use a range of small tools, including scissors, paintbrushes and cutlery.	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment. When designing and making, pupils should be taught to: <u>Design</u> Design purposeful, functional, appealing products for themselves and other users based on design criteria	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to: <u>Design</u> Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

	Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology <u>Make</u> Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics <u>Evaluate</u> Explore and evaluate a range of existing products Evaluate their ideas and products against design criteria <u>Technical knowledge</u> Build structures, exploring how they can be made stronger, stiffer and more stable Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	<u>Make</u> Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities <u>Evaluate</u> Investigate and analyse a range of existing products Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understand how key events and individuals in design and technology have helped shape the world <u>Technical knowledge</u> Apply their understanding of how to strengthen, stiffen and reinforce more complex structures Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] Apply their understanding of computing to program, monitor and control their products.
	<u>Cooking and Nutrition</u> As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.	
	Pupils should be taught to: Use the basic principles of a healthy and varied diet to prepare dishes Understand where food comes from.	Pupils should be taught to: Understand and apply the principles of a healthy and varied diet Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Design Technology Progression							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Skill Focus - DESIGNING	To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. To use a range of small	To state which products they are designing and making. To describe what their products are for. To use simple design criteria to help develop their ideas.	To say whether their products are for themselves or others & to say how their products will work. To say how they will make their products suitable for their	To describe the purpose of their products. To share and clarify ideas through discussion. To gather information about the needs and wants of particular individuals and groups. To generate realistic ideas, focusing on the needs of the user. To explain how particular parts of their products work.		To indicate the design features of their products that will appeal to intended users. To use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas. To identify the needs, wants, preferences and values of particular individuals and groups. To develop a simple design specification to guide	

	tools, including scissors, paint brushes and cutlery.	To use knowledge of existing products to help come up with ideas. To develop and communicate ideas by talking and drawing.	intended users. To generate ideas by drawing on their own experiences. To model ideas by exploring materials, components and construction kits and by making templates and mock- ups. To use information and communication technology, where appropriate, to develop and communicate their ideas.	To model their ideas using prototypes and pattern pieces. To develop their own design criteria and use these to inform their ideas. To make design decisions that take account of the availability of resources.	their thinking. To make design decisions, taking account of constraints such as time, resources and cost. To work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. To use computer-aided design to develop and communicate their ideas. To carry out research, using surveys, interviews, questionnaires and web-based resources. To generate innovative ideas, drawing on research.
Vocabulary	explore, pattern, make, create, design	mechanisms, levers, sliders, fulcrum, pivot, design, make, product	fruit, vegetables, carbohydrate, protein, dairy, generate, idea, mechanism	textile, sewing, fabric, smart fabric, stitch, join, clarify, evaluate, mix, stir, combine, claw grip, bridge hold, mash, pattern, prototype	drawing, diagram, exploded diagram, explain, justify, guide, specification, context, enterprise, evaluative, computer-aided design, innovative
Skill focus - MAKE	To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. To use a range of small tools, including scissors and paint brushes.	To plan by suggesting what to do next. To select from a range of materials and components according to their characteristics. To follow procedures for safety and hygiene. To assemble, join and combine materials and components.	To select from a range of tools and equipment, explaining their choices. To use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components. To measure, mark out, cut and shape materials and components. To use finishing techniques, including those from art and design.	To select tools and equipment suitable for the task. To follow procedures for safety and hygiene. To order the main stages of making. To measure, mark out, cut and shape materials and components with some accuracy and assemble, join and combine materials and components with some accuracy. To explain their choice of tools and equipment in relation to the skills and techniques they will be using. To apply a range of finishing techniques, including those from art and design, with some accuracy.	To select materials and components suitable for the task. To use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. To produce appropriate lists of tools, equipment and materials that they need. To accurately measure, mark out, cut and shape materials and components. To accurately apply a range of finishing techniques, including those from art and design. To compare their performances and demonstrate improvement to achieve their personal best. To apply rules of fair play to competitive games. To develop techniques of a variety of skills to maximise team effectiveness. To explain their choice of materials and components according to functional properties and aesthetic qualities. To formulate step-by-step plans as a guide to making. To accurately assemble, join and combine materials and components. To use techniques that involve a number of steps and demonstrate resourcefulness when tackling practical problems.

Vocabulary	explore, pattern, make, create, design	mechanisms, levers, sliders, fulcrum, pivot, design, make, product	fruit, vegetables, carbohydrate, protein, dairy, generate, idea, mechanism	textile, sewing, fabric, smart fabric, stitch, join, clarify, evaluate, mix, stir, combine, claw grip, bridge hold, mash, pattern, prototype	drawing, diagram, exploded diagram, explain, justify, guide, specification, context, enterprise, evaluative, computer-aided design, innovative
Skill Focus - EVALUATE	To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	To talk about their design ideas and what they are making. To know what products are. To know who products are for. To know what they like and dislike about products.	To make simple judgements about their products and ideas against design criteria. To suggest how their products could be improved. To know what products are for, how products work, how products are used, where products might be used and what materials products are made from.	To identify the strengths and areas for development in their ideas and products. To investigate and analyse how well products have been made. To investigate and analyse why materials have been chosen. To refer to their design criteria as they design and make. To investigate and analyse who designed and made the products. To investigate and analyse where products were designed and made. To investigate and analyse how well products have been designed. To investigate and analyse what methods of construction have been used. To know about inventors, designers, engineers, chefs and manufacturers who have developed groundbreaking products. To use their design criteria to evaluate their completed products. To investigate and analyse when products were designed and made. To investigate and analyse whether products can be recycled or reused.	To consider the views of others, including intended users, to improve their work. To investigate and analyse how well products work and how well products achieve their purposes. To evaluate their ideas and products against their original design specification. To investigate and analyse how much products cost to make. To investigate and analyse how sustainable the materials in products are. To investigate and analyse how well products meet user needs and wants. To critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. To investigate and analyse how innovative products are. To investigate and analyse what impact products have beyond their intended purpose.
Vocabulary	explore, pattern, make, create, design	mechanisms, levers, sliders, fulcrum, pivot, design, make, product	fruit, vegetables, carbohydrate, protein, dairy, generate, idea, mechanism	textile, sewing, fabric, smart fabric, stitch, join, clarify, evaluate, mix, stir, combine, claw grip, bridge hold, mash, pattern, prototype	drawing, diagram, exploded diagram, explain, justify, guide, specification, context, enterprise, evaluative, computer-aided design, innovative
Skill Focus - TECHNICAL KNOWLEDGE	To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. To use a range of small tools, including scissors and paint brushes.	To know about the simple working characteristics of materials and components. To know about the movement of simple mechanisms such as levers, sliders, wheels and axles. To know about how freestanding structures can be made stronger, stiffer and more stable.	To know that a 3-D textiles product can be assembled from two identical fabric shapes. To know that food ingredients should be combined according to their sensory characteristics. To know the correct technical vocabulary for the projects they are undertaking.	To know how to use learning from science to help design and make products that work. To know how mechanical systems such as levers and linkages or pneumatic systems create movement. To know how to make strong, stiff shell structures. To know that a single fabric shape can be used to make a 3D textiles product. To know how to use learning from mathematics to help design and make products that work. To know how simple electrical circuits and components can be used to create functional products. To know how to program a computer to control their products.	To know that materials have both functional properties and aesthetic qualities. To know the correct technical vocabulary for the projects they are undertaking. To know how mechanical systems such as cams or pulleys or gears create movement. To know how to reinforce and strengthen a 3D framework. To know that a 3D textiles product can be made from a combination of fabric shapes. To know that materials can be combined and mixed to create more useful characteristics. To know that mechanical and electrical systems have an input, process and output.

				To know that food ingredients can be fresh, pre-cooked and processed.	To know how more complex electrical circuits and components can be used to create functional products. To know how to program a computer to monitor changes in the environment and control their products. To know that a recipe can be adapted by adding or substituting one or more ingredients.
Vocabulary	explore, pattern, make, create, design	mechanisms, levers, sliders, fulcrum, pivot, design, make, product	fruit, vegetables, carbohydrate, protein, dairy, generate, idea, mechanism	textile, sewing, fabric, smart fabric, stitch, join, clarify, evaluate, mix, stir, combine, claw grip, bridge hold, mash, pattern, prototype	drawing, diagram, exploded diagram, explain, justify, guide, specification, context, enterprise, evaluative, computer-aided design, innovative
Skill Focus - COOKING AND NUTRITION	To use a range of small tools, including scissors, paint brushes and cutlery.	To know that all food comes from plants or animals. To know that everyone should eat at least five portions of fruit and vegetables every day. To know how to prepare simple dishes safely and hygienically, without using a heat source.	To know that food has to be farmed, grown elsewhere (e.g. home) or caught. To know how to name and sort foods into the five groups in 'The eatwell plate'. To know how to use techniques such as cutting, peeling and grating.	To know 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. To know that to be active and healthy, food and drink are needed to provide energy for the body. To know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. To know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The eatwell plate'.	To know that seasons may affect the food available. To know that recipes can be adapted to change the appearance, taste, texture and aroma. To know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. To know how food is processed into ingredients that can be eaten or used in cooking.
Vocabulary	explore, pattern, make, create, design	mechanisms, levers, sliders, fulcrum, pivot, design, make, product	fruit, vegetables, carbohydrate, protein, dairy, generate, idea, mechanism	textile, sewing, fabric, smart fabric, stitch, join, clarify, evaluate, mix, stir, combine, claw grip, bridge hold, mash, pattern, prototype	drawing, diagram, exploded diagram, explain, justify, guide, specification, context, enterprise, evaluative, computer-aided design, innovative