

Design Technology Curriculum Progression
Dundry Primary School

Purpose and Aims of our Design Technology Curriculum:

Purpose and aims of our Design Technology curriculum:

At Dundry we strive to deliver design technology in a way that is inspiring, rigorous and practical. We encourage creativity and imagination; enabling pupils to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. Children will acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Our pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens who relish a challenge. Through the evaluation of past and present design and technology, our children 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.

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].

Within cooking and nutrition, 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.

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.

Meaningful links within the curriculum:

English-

Design and Technology contributes to the teaching of English at Dundry by providing valuable opportunities for reinforcement and application of key skills within writing. Discussion, drama and role-play are also important ways for the children to develop an understanding that people have different views about Design and Technology. The children explain their designs orally or on paper and later, the evaluation of their products require children to articulate their ideas and to compare and contrast their views with those of other people. Through discussion children learn to justify their own views and clarify their design ideas.

Mathematics-

Many of the Design and Technology units provide the opportunity to use their mathematical skills in real-life situations and contexts. The main areas of mathematics covered in these units are:- real-life problems measure shape and space handling data

Science-

Many units provide opportunities for children to use and develop scientific knowledge and understanding. There are opportunities for pupils to use their knowledge and understanding through: working with a range of materials, eg: a range of fabrics and a range of different types of paper and card. working with electrical circuits and switches. working with food products related to healthy eating.

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Computing-

We use Computing to support Design and Technology teaching when appropriate. Children use software to enhance their skills in designing and making, and use draw-and-paint programs to model ideas and make repeating patterns. They use the internet to source a range of information and gain access to images of people, technological images and environments. The children also use Computing to collect information and to present their designs through draw-and-paint programs.

Art and Design-

Many units provide opportunities for pupils to use and develop creative skills, knowledge and understanding. Opportunities exist for pupils to use their creative knowledge, skills and understanding through: the use of pattern, texture and colour. experimenting with visual elements such as pattern and shape. investigation of products from a range of cultures safe use of materials and tools.

Personal, Social and Health Education (PSHE) and Citizenship-

We encourage the children to develop a sense of responsibility in following safe procedures when making things. They also learn about health and healthy diets. Their work encourages them to be responsible and to set targets to meet deadlines, and they also learn through their understanding of personal hygiene, how to prevent disease from spreading when working with food.

Spiritual, Moral, Social and Cultural Development-

The teaching of Design and Technology offers opportunities to support the social development of our children through the way we expect them to work with each other in lessons. Our groupings allow children to work together, and give them the chance to discuss their ideas and feelings about their own work and the work of others. Through their collaborative and cooperative work across a range of activities and experiences in Design and Technology, the children develop respect for the abilities of other children and a better understanding of themselves. They also develop a respect for the environment, for their own health and safety and for that of others. They develop their cultural awareness and understanding, including the contribution that people from other cultures have made to the design and technology industry. They learn to appreciate the value of differences and similarities. A variety of experiences teaches them to appreciate that all people are equally important, and that the needs of individuals are not the same as the needs of groups.

Our big ideas within DT are to: investigate, design, make, and evaluate. These big ideas help our children to make sense of the subject and the specific aspects within it. These may also help structure our DT sessions and provide clear progression.

To ensure children 'catch up' following the disruption of the Coronavirus pandemic our 2-year cycle has been revised to revisit any missed content. Units will start with recap and revision to ensure that children are secure in essential prior knowledge and skills before moving on. To support teachers in planning and teaching the design technology curriculum, most units of work draw upon ideas from Nuffield STEM units of work.

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The National Curriculum and Early Year Breadth of Study in Design Technology

	EYFS	KS1	KS2	
	Reception	Year 1 / Year 2	Year 3 / Year 4	Year 5 / Year 6
Food Technology	<p><u>Design</u> *Discuss ingredients and recipes</p>	<ul style="list-style-type: none"> use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from 	<ul style="list-style-type: none"> 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 	
Skills / Disciplines and Knowledge	<p><u>Design</u> *Discuss ingredients, recipes and tastes</p> <p><u>Make</u> *Combine ingredients *Follow precise instructions *Use language of quantity- a lot, more than *Support physical development, and learn about keeping safe whilst experiencing risks *Find out how substances can be changed by tools, for example by whisking egg whites *Use tools for a purpose, supporting their physical development, and learn about keeping safe whilst experiencing risks</p> <p><u>Evaluate</u> *Cause-effect relationships, and observe which changes are one-way and reversible *Reflect on the process of change</p>	<p><u>Design</u></p> <ul style="list-style-type: none"> design purposeful, functional, appealing products for themselves and other users based on design criteria generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology <p><u>Make</u></p> <ul style="list-style-type: none"> 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 <p><u>Evaluate</u></p> <ul style="list-style-type: none"> explore and evaluate a range of existing products evaluate their ideas and products against design criteria <p><u>Technical knowledge</u></p> <ul style="list-style-type: none"> 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 	<p><u>Design</u></p> <ul style="list-style-type: none"> 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 <p><u>Make</u></p> <ul style="list-style-type: none"> 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 <p><u>Evaluate</u></p> <ul style="list-style-type: none"> 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 <p><u>Technical knowledge</u></p> <ul style="list-style-type: none"> 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 	

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Our 2-year Cycle Long Term Overview in the Art & Design and Design Technology (How we have organised the N.C. Breadth of Study)

Cycle A 2021 - 2022

EYFS Breadth of Study	Theme	Me and my home / local history	Seasons	Transport	Space (or Explorers?)	Plants and growing things	Under the sea
	Key learning ART DT	Exploring our art area, combining media Homes Bridges +cooking - fruit salad for harv Giuseppe Arcimboldo	Earth Art - painting, sculpture, collage +make Christmas cards using printing techniques	Colour Creations - colour mixing, works of Kandinsky	Fridge magnets +cooking for class picnic - toast and salad, drinks etc	Henri Rousseau - famous artist, sketching, painting	Textile Tree
Year 1/2 Breadth of Study	ART DT	Moving Picture +cooking - fruit salad for harvest	Earth Art - painting, sculpture, collage +make Christmas cards using printing techniques	Textile Tree	Henri Rousseau - famous artist, sketching, painting	Fridge magnets +cooking for class picnic - toast and salad, drinks etc	Colour Creations - colour mixing, works of Kandinsky
Year 3&4 Breadth of Study	ART DT	William Morris - sketching, printing +cooking - bread rolls for harvest	Party Hats +make Christmas gift bags using tie-dye and simple stitching	Andy Warhol and the Pop Art movement - self-portraits, digital media	Pop-up books	Plant art - mixing paint, clay, Georgia O'Keeffe + cooking for class picnic - pastry treats and smoothies	Class display
Year 5&6 Breadth of Study	ART DT	Viking Art - pattern, sketching, textiles +cooking - vegetable soup for harvest	Beast with moving mouth	Monet and the Impressionists - sketching, painting	Puppets	Sculpting Vases - clay	Printed and sewn cushion cover + cooking for class picnic - cakes and biscuits for different dietary needs

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Cycle B 2022 - 2023

EYFS Breadth of Study	Theme	Autumn weather and harvest	Toys				Explorers and Pirates
	Key learning						
Year 1& 2 Breadth of Study	ART DT	Moving Picture +cooking - fruit salad for harvest	Andy Goldsworthy - materials and sculptures +make loom fish as Christmas gifts	Roly Poly	Sparks and Flames - chalk, collage, 3D, mixed media	Cooking for class picnic - biscuits and fruit kebabs	Animal Art - symbolism, paint, 3D, pattern
Year 3&4 Breadth of Study	ART DT	LS Lowry - colour mixing and painting +cooking - bread rolls for harvest	Toy to play if bedridden +make Christmas bookmarks using sewing (sampler)	Famous buildings - architects in history	Treasure Box	Viewpoints - photography and printing + cooking for class picnic - sandwiches and fruit lollies	Fabulous Flowers
Year 5&6 Breadth of Study	ART DT	City Scapes - 3D pop art, ink drawing, mixed media +cooking - vegetable soup for harvest	Frida Kahlo - surrealism, portraits, painting	Moving Buggy	Light and torches	Statue + cooking for class picnic - breads and savouries for different dietary needs	What a performance - fashion, design, textiles Combine ART and DT skills

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Mapping coverage of our Big Ideas within each phase

	EYFS- R	KS1 1 - Year 1 and Year 2 Cycle A			KS1 1 - Year 1 and Year 2 Cycle B			LKS2 - Year 3 and Year 4 Cycle A			LKS2 - Year 3 and Year 4 Cycle B			UKS2 - Year 5 and Year 6 Cycle A			UKS2 - Year 5 and Year 6 Cycle B		
<i>unit title</i>	Introducing basic skills	Moving Picture (story)	Textile Tree	Fridge magnets	Moving Picture (nursery rhyme)	Roly Poly		Party Hats	Pop-up books	Class display	Toy to play if bedridden	Treasure Box		Beast with moving mouth	Puppets		Moving Buggy	Light and torches	Statue
<i>Take inspiration from designs around us or in the past</i>	Isambard Kingdom Brunel's SS Great Britain	explore story books with moving parts	use knowledge of materials, likes and dislikes	explore magnets from home/holiday	explore story books with moving parts	look at rolling toys from the past and present		look at hats we wear for different occasions	explore a range of pop-up books	look at billboards, school displays, shop displays, advertising	look at board games and other games that can be played sitting down	investigate boxes from different cultures and periods in history - purpose and design		explore how cams, cranks and motors work on toys and in real life designs	explore different types of puppets - toys and those used in theatre, traditional and multicultural		investigate the chassis and mechanisms of moving vehicles, including go-karts	explore circuits and torches of different kinds	investigate statues around the world - contemporary, modern, symbolic
<i>Design</i>	Design, make and evaluate a junk model boat based on Brunel's SS Great Britain	design and make a moving picture of a well-known story	explore materials to make a textile tree for classroom	design and make a fridge magnet to display spellings	design and make a moving picture for a nursery rhyme	design and make a toy that rolls		design and make a party hat	design and make a pop up book for a younger child	design and make a large display for class learning	design and make a toy or game that can be played in bed if ill	design and make a 3D box to store favourite things		design and make an animal where a mechanism makes the mouth move	design and make a puppet with moving mechanisms (could be electronic)		Design and make a buggy that will move forwards and backwards	Design and make a working torch	Design and make a class statue
<i>Make</i>																			
<i>Evaluate & improve</i>																			
<i>technical skills (mechanics, construction, materials)</i>	Use one-handed tools and equipment for: cutting sticking joining	folding cutting levers wheels	wrap fold cut labels	measure mark cut layer	folding cutting levers wheels	cut shape join wheels axles		measure mark cut shape join printing applique	folding cutting measure flaps slides springs rotate levers	tools sticking cutting measure mark choice shelves	measure mark cut join fold frames	nets measure mark decorate joins		levers winding pulleys gears cranks sliders drill screws nail cut	templates joins pulleys electronics programming		saw drill glue axles wheels motors measure cut join circuits components programming	measure cut join circuits components	measure mark cut join strength
<i>food & cooking</i>	fruit salad for harvest	fruit salad for harvest		class picnic: toast and salad, drinks etc	fruit salad for harvest		class picnic: biscuits and fruit kebabs	bread rolls for harvest		class picnic: pastry treats and smoothies	bread rolls for harvest		class picnic - sandwiches and fruit lollies	vegetable soup for harvest		class picnic: cakes and biscuits for different dietary needs	vegetable soup for harvest		class picnic: breads and savouries for different dietary needs

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<i>technical skills</i>	cutting chopping	peel cut origins		grate peel cut measure weigh	peel cut origins		grate peel cut measure weigh	seasonality & origins measure weigh bake		cut grate measure weigh cook store	seasonality & origins measure weigh bake		cut peel grate spread balance	ingredients recipes origins cut peel grate cook		diet cooking techniques measure weigh store	ingredients recipes origins cut peel grate cook		diet cooking techniques measure weigh store
<i>Textiles</i>	feel, discuss and compare fabrics- create a feely board		make Christmas cards using printing techniques			make loom fish as Christmas gifts			+make Christmas gift bags using tie-dye and simple stitching		make Christmas bookmarks using sewing (sampler)		Fabulous Flowers		Printed and sewn cushion cover				What a performance - fashion, design, textiles Combine ART and DT skills
<i>technical skills</i>	Weaving threading	Weaving threading	templates decoration			weaving decoration			stitch colour		sew decorate		stitch sew colour decorrate		templates printing stitching sewing decorate				templates printing stitching sewing decorate

Glossary of vocabulary used in our DT curriculum

https://20353.stem.org.uk/Nuffield%20Glossary2/index.html?_ga=2.163961271.90714748.1622877556-2045021635.1622625070

How will we assess progress?

We will use a BAD ARE assessment grid to record children's progress within the Big Ideas, at the end of the year.

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End of phase expectations in the skills and disciplines of Design Technology (some of these expectations will be covered through Art and Design and Science)

Milestone 1 (Year 1 - Year 2)

Learning Objective	Key Indicator	Basic	Advancing	Deep
To master practical skills - food	Cut, peel or grate ingredients safely and hygienically.	With the support of a teacher, ingredients are prepared safely and hygienically.	There is a growing awareness of safety and hygiene procedures when preparing food.	There is a good understanding of the need to work safely and hygienically when preparing food.
	Measure or weigh using measuring cups or electronic scales.	With the support of a teacher, weighing and measuring is accurate.	There is a growing ability to weigh and measure accurately.	There is a good understanding of how to weigh and measure accurately using a range of scales
To master practical skills - materials	Cut materials safely using tools provided.	With the support of a teacher, materials are cut safely.	There is a growing ability to cut materials safely.	There is a good level of control of tools so that materials are cut safely.
	Measure and mark out to the nearest centimetre.	When supported by a teacher, maths skills are sometimes used to help measure and mark to the nearest centimetre.	Maths skills are often used to help measure and mark to the nearest centimetre.	There is a good application of maths skills to help measure and mark to the nearest centimetre.
	Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).	During structured activities, a range of cutting and shaping techniques are used.	There is a growing use of a range of cutting and shaping techniques.	There is a wide use of a range of cutting and shaping techniques.
	Demonstrate a range of joining techniques (such as gluing, using hinges or combining materials to strengthen).	During structured activities, a range of joining techniques are used.	There is a growing use of a range of joining techniques.	There is a wide use of a range of joining techniques.
To master practical skills - textiles	Shape textiles using templates.	With the support of a teacher, textiles are shaped using templates.	Templates are beginning to be created and used to shape textiles.	Templates are created to a good standard and used to shape textiles effectively
	Join textiles using running stitch.	With the support of a teacher, textiles are joined with a basic running stitch.	A basic running stitch is used well to join textiles.	A controlled running stitch is used to securely join textiles
	Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).	With the support of a teacher, a number of decoration techniques are experienced.	A growing number of decoration techniques are used.	Effective decoration techniques are chosen and applied to good effect.

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To master practical skills - Electrical and electronics	Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).	With the support of a teacher, a range of common faults are identified.	A growing range of faults are correctly identified.	A wide range of faults are identified, and possible solutions suggested.
To master practical skills - Construction	Use materials to practise drilling, screwing, gluing and nailing materials to make products (such as wheeled vehicles).	With the support of a teacher, materials are combined to make products.	With growing independence, materials are combined to make products.	Good choices of materials and how to combine them are made when making a wide range of products.
To master practical skills - mechanics	Create products using levers and winding mechanisms.	With the support of a teacher, products using levers and winding mechanisms are made.	With growing independence, and a developing understanding of mechanisms, products using levers and winding mechanisms are made.	With a high level of independence and a good understanding of mechanisms, good-quality products using levers and winding mechanisms are made.
To design, make, evaluate and improve	Design products that have a clear purpose and an intended user.	When supported by a teacher, designs to meet a purpose are created.	With growing independence, designs that have a clear purpose and intended user are created.	With a high level of independence and a good understanding that designs require a purpose and user, very good designs are created.
	Make products, refining the design as work progresses.	When encouraged by a teacher, designs are improved as the making process develops.	Generally, good-quality products are made by a process of refinement during the making process.	High-quality products are made through a process of constant refinement throughout the making process.
To take inspiration from design throughout history	Explore objects and designs to identify likes and dislikes of the designs.	With structured activities, designs of others are evaluated to identify likes and dislikes.	With growing independence and a growing understanding of design features, likes and dislikes of the designs of others are identified.	With a high level of independence and a good understanding of design features, likes and dislikes are identified, explained and justified with examples.
	Suggest improvements to existing designs.	When prompted, basic improvements to existing designs are suggested.	Suitable and appropriate improvements to existing designs are generally identified.	Thoughtful and well-reasoned improvements to existing designs are identified.

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Milestone 2 (Year 3 - Year 4)

Learning Objective	Key Indicator	Basic	Advancing	Deep
To master practical skills - food	Prepare ingredients hygienically using appropriate utensils.	When reminded, appropriate utensils are chosen to safely and hygienically prepare food.	Appropriate utensils are generally chosen to safely and hygienically prepare food.	Appropriate utensils are chosen to safely and hygienically prepare food, with clear explanations for the choices made.
	Measure ingredients to the nearest gram accurately.	With support from a teacher, accurate measurement, to the nearest gram, is experienced.	There is generally accurate measurement to the nearest gram.	There is accurate measurement to the nearest gram using a variety of scales.
To master practical skills - materials	Cut materials accurately and safely by selecting appropriate tools.	When reminded, appropriate tools are chosen to safely cut materials	Appropriate tools are generally chosen to safely cut materials.	Appropriate utensils are chosen to safely cut materials, with clear explanations for the choices made.
	Measure and mark out to the nearest millimetre.	With support from a teacher, accurate measurement and marking, to the nearest millimetre, is experienced.	There is generally accurate measurement and marking to the nearest millimetre.	There is accurate measurement and marking to the nearest millimetre using a variety of scales.
	Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut-outs).	With support from a teacher, appropriate techniques are used to cut and shape materials.	Appropriate techniques are generally chosen to cut and shape materials.	Appropriate techniques are chosen to cut and shape materials, with clear explanations for the choices made.
	Select appropriate joining techniques.	When reminded, appropriate joining techniques are used.	Appropriate joining techniques are generally selected and used well.	Appropriate joining techniques are selected and used to good effect, with reasons for choices clearly explained.
To master practical skills - textiles	Understand the need for a seam allowance.	When demonstrated by a teacher, and support provided, appropriate allowances are made when joining fabrics.	Generally, appropriate allowances for joining fabrics are used.	Accurate and well-planned allowances for joining fabrics are used.
	Join textiles with appropriate stitching.	When demonstrated by a teacher, appropriate stitching is attempted with some good effects.	Generally, stitching is appropriate to the product and effective.	Confident and carefully chosen stitching, suitable for the product's purpose, is well executed.
	Select the most appropriate techniques to decorate textiles.	When reminded, appropriate techniques are used to decorate textiles.	Generally, interesting and appropriate techniques are used to decorate textiles.	Excellent choices of appropriate techniques provide interesting and eye-catch
To master practical skills - electricals and electronics	Create series and parallel circuits.	When reminded, knowledge of science is applied to create series and parallel circuits in products.	Generally, science knowledge is applied well to create series and parallel circuits in products.	Science knowledge is readily applied to good effect in creating series and parallel circuits in products.

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To master practical skills - Construction	Choose suitable techniques to construct products or to repair items.	When reminded by a teacher, suitable techniques are used to construct products or repair items.	Suitable techniques are generally used to construct or repair items.	Suitable techniques are chosen and justified when constructing or repairing items.
To master practical skills - mechanics	Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).	When reminded, knowledge of science is applied to creating mechanism products.	Generally, knowledge of science is applied to creating mechanism products.	Knowledge of science is readily applied when creating mechanism products.
To design, make, evaluate and improve	Design with purpose by identifying opportunities to design.	During structured activities, opportunities for design are realised.	Generally, there is a good understanding of opportunities for design.	Excellent examples of suggestions for design show an in-depth understanding of the need for design.
	Make products by working efficiently (such as by carefully selecting materials).	When supported by a teacher, appropriate materials are selected.	Planning of workflows and careful selection of materials means work is generally carried out efficiently.	Very efficient workflows and well-reasoned choices of materials make work very efficient.
	Refine work and techniques as work progresses, continually evaluating the product design.	When encouraged, techniques are refined throughout a project to improve the design.	Generally, designs are evaluated and refined throughout a project.	Designs are continually evaluated and improved throughout a project, resulting in high-quality products.
To take inspiration from design throughout history	Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.	With support from a teacher, some of the most notable designers' work is examined to provide inspiration for ideas.	A growing knowledge of a range of notable designers is used to provide inspiration for designs.	An in-depth knowledge of some notable designers provides inspiration and ideas for designs.
	Improve upon existing designs, giving reasons for choices.	With support from a teacher, existing designs are evaluated and improvements made.	Generally, some opportunities for improving existing designs are made, giving reasons for choices.	Many good opportunities for developing existing designs are noticed and acted upon.

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Milestone 3 (Year 5 - Year 6)

Learning Objective	Key Indicator	Basic	Advancing	Deep
To master practical skills - food	Understand the importance of correct storage and handling of ingredients (using knowledge of microorganisms).	There is some awareness of the principles and practices of safe food storage and handling.	Science knowledge is applied to the safe storage and handling of ingredients.	A thorough scientific understanding of microorganisms is rigorously applied to the practices of storage and handling of ingredients.
	Measure accurately and calculate ratios of ingredients to scale up or down from a recipe.	When reminded, mathematical knowledge is applied to accurately calculate ratios of ingredients.	Mathematical knowledge is generally applied to calculate ratios of ingredients.	Knowledge of mathematics is readily applied to calculate ratios of ingredients.
	Demonstrate a range of baking and cooking techniques.	When guided, a range of baking and cooking techniques is demonstrated.	A developing range of baking and cooking techniques is demonstrated.	A good range of baking and cooking techniques is demonstrated
	Create and refine recipes, including ingredients, methods, cooking times and temperatures.	With support from a teacher, a range of recipes are created.	A developing range of interesting recipes is created.	A wide repertoire of recipes with interesting combinations of ingredients is created.
To master practical skills - materials	Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape).	There are some good examples of precision cutting.	There are many good examples of precision cutting using a growing range of cutting implements.	There are widespread examples of precision cutting using a wide variety of cutting implements.
	Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper).	When reminded, the qualities of materials are considered when selecting tools.	The properties of materials are generally considered in choosing tools.	An in-depth understanding of the properties of materials is used to carefully select appropriate tools.
To master practical skills - textiles	Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration).	There are some good examples of effective joins.	There is a growing range of examples of effective joining techniques that show control and some precision.	There is a wide range of very effective joining techniques that show a high level of precision and control.

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	Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion).	There are some good examples of art skills being used to provide decoration.	There are many good examples of art skills being applied to good effect to provide visual and tactile decoration.	Well-chosen art skills are used to create eye-catching decoration.
To master practical skills - electricals and electronics	Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistor and chips).	With support, and reminders of science knowledge, a range of circuits is created and used in products.	Science knowledge is generally applied to the design process to create products that employ a range of electronic components.	Science knowledge is readily applied to the design process, creating high-quality products that employ a broad range of electronic components.
To master practical skills - construction	Develop a range of practical skills to create products and repair items (such as cutting, drilling and screwing, nailing, gluing, filling and sanding).	With support, a range of practical skills are emerging to help create or repair products.	A growing range of practical skills are used effectively to make or repair products.	A wide range of practical skills are put to very effective use to make or repair a wide variety of products
To master practical skills - mechanics	Convert rotary motion to linear using cams.	With support, cams are created.	A range of differently shaped cams are created.	Combinations of differently shaped cams are used to create interesting and useful movement.
	Use innovative combinations of electronics (or computing) and mechanics in product designs.	With support, combinations of design components are used in product designs.	There is some interesting experimentation with combinations of design components in product designs.	There are some innovative combinations of design components in product designs.
To design, make, evaluate and improve	Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).	With guidance, products are designed with some reference to the user experience.	Generally, the user experience is used as a rationale for design choices. The experience of the user drives the design process.	There are many excellent examples and explanations of how choices improve the user experience.
	Make products through stages of prototypes, making continual refinements.	With support, prototypes are made and later developed.	Generally improvements are continual throughout the making process, with initial prototypes often changed radically through a number of refinements.	Initial prototypes and alternative designs are thoroughly explored and explained. Refinements are continually made throughout the making process.
	Ensure products have a high quality finish, using art skills where appropriate.	When reminded, a high-quality finish is achieved by applying art skills.	Art skills are generally applied and, along with attention to detail, create a high-quality finish.	Impeccable attention to detail and the extremely effective application of art skills create a professional quality finish.
To take inspiration from design throughout history	Combine elements of design from a range of inspirational designers	With support, elements of design from notable designers are incorporated into designs.	Generally, there are some well reasoned choices for combining elements from a range of designers.	An in-depth knowledge of some designers' work is reflected in some striking designs. The rationale and background to the design ideas are explained thoughtfully.

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	throughout history, giving reasons for choices.			
	Create innovative designs that improve upon existing products.	There are some good examples of designs that improve upon existing products.	There is a growing range of examples of designs that improve upon existing products.	There are some notable examples of how the design of an existing product has been greatly improved.
	Evaluate the design of products so as to suggest improvement to the user experience.	When reminded, evaluations are carried out throughout and at the end of the design process.	Evaluations are generally ongoing and thorough. They relate to the user experience.	The user experience drives critical self-evaluation and helps to identify current and future improvements.