

Design Technology Curriculum Progression
Shoscombe Primary School

Stephen Gardiner: "Good buildings come from good people, and all problems are solved by good design."

Purpose and Aims of our Design Technology Curriculum:

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 Shoscombe 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.

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.

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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:

- Design Process
- Technical Skills
- Experience
- Designs and Designers
- Function

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		<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>Design</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>Make</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>Evaluate</p> <ul style="list-style-type: none"> explore and evaluate a range of existing products evaluate their ideas and products against design criteria <p>Technical knowledge</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>Design</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>Make</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>Evaluate</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>Technical knowledge</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

		Sculpture	Watercolour	Design and Architecture Design		Product Design	Food Around the world
EYFS Breadth of Study	Expressive Art and Design	Tiger masks Salt dough tea party food.	Nativity play props Firework pictures	Clay - characters from books	Vehicles modelling	Animal shadow puppets	Milk bottle Elmer Paper chain caterpillars Symmetrical butterfly prints.
	Cooking	Making bread	Planets out of fruit/vegetables	Salt dough creations	Transport biscuits	Fruit smoothies	Elmer - jelly and elephant sandwiches
Year 1&2 Breadth of Study	Art / DT	Community Clay Mining Community/ place Artist Anthony Gormely, Ted Holloway, Van Gough Harvest cooking fruit Salad	Hot and Cold Preserved in Ice Painting Colour/ Watercolour Melting Crayons	Collage to make architectural shape collage Bridges Exploring shape Model making		Printing - fruit	Teddy Bears PicNic Wraps and Drinks
Year 3&4 Breadth of Study	Art / DT	School Award Trophies Romans Leonardo Da Vinci Animation Drawing Historical Statutes. Harvest Cooking Bread Rolls	Water - Minerva Water colour Resist / Bubble Marking Turner	Pyramids Technical drawing 3D shape		Printing lino	+ cooking for class picnic - Cheese straws and smoothies Elderflower Cordial (forest)
Year 5&6 Breadth of Study	Art / DT	Bust Georgians Political Satire Satirical illustrations Cartoon and comic strip Harvest cooking Apple Crumble	CityScape and Skyline Liverpool and Bristol Lowry Water Colour	Celtic knot Jewellery Design Technical Drawing		Printing Batik	+ cooking for class picnic - cakes and biscuits for different dietary needs

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Mapping of our Big Ideas within each phase for Cycle A

		T3/4	T4	T3 & 4		T1	T3	T4
	EYFS	KS1 1 - Year 1 and Year 2		LKS2 - Year 3 and Year 4		UKS2 - Year 5 and Year 6		
Cycle A	Expressive arts and design	Architectural Shape	Wraps	Technical drawings- Pyramids	Sausage Rolls	Celtic Jewellery	Quiche	
Design Process	<i>See EYFS progression docs</i>	Make 3D nets and test the property of shape Make lego model explore function Understand what a design brief is and create a simplified design brief. Make and evaluate a bridge	Test Pastry is tough if it gets too hot and is overworked Research what ingredients are going to be used in their sausage roll Taste each other and listen to experts to model Vocabulary used. Consider who they would change the recipe next time	Make Cylinders Construct post and lintel models Understand what a design brief is and create a simplified design brief. Make and evaluate a bridge	Test Pastry is tough if it gets too hot and is overworked Research what ingredients are going to be used in their sausage roll Taste each other and listen to experts to model Vocabulary used. Consider who they would change the recipe next time	Research using Anglo Saxon reflect on symbolism used in design generate a mood board to communicate ideas Drawn Designed Make jewellery	Test Pastry is tough if it gets too hot and is overworked Research what ingredients are going to be used in their sausage roll Taste each other and listen to experts to model Vocabulary used. Consider who they would change the recipe next time	
Technical Skills	<i>See EYFS progression docs</i>	drawing, cutting and constructing 3D shapes from a net.	using a knife safely cuts ingredients. Children taught safe knife hold	designing symbols Carving symbols construct columns build post and lintel models build a lego room	using a knife safely cuts ingredients. Children taught safe knife hold	designing symbols Mood Board Construction Construct Jewellery Must be worn You need to hang it.	using a knife safely cuts ingredients. Children taught safe knife hold Measure accurately using scales to nearest gram	

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		construct 3D forms from sticks and plasticine build a lego room Printing using lego bricks to explore the shape and form of the block. build a bridge.	Measure accurately using scales to nearest gram Select equipment eg graters, frying depending on recipes	Printing using lego bricks to explore the shape and form of the block. build a bridge.	Measure accurately using scales to nearest gram Select equipment eg graters, frying depending on recipes		Select equipment eg graters, frying depending on recipes
Experience	<i>See EYFS progression docs</i>	Human experience of different spaces within buildings. ImagiCrystal ne the space within Crystal Palace. Experience the space Den. Imagine the experience of being in the lego room.	Adult Model feedback re dishes - Great british or bake off style. You could watch a section from iplayer. Children use taught vocab for feedback.	Experience the hugeness of trees and the expansiveness of nature and the enormity of the forest. Understand the ancient Egyptian culture and their social values. Reflecting on our Values as a school and how we can represent those.	Adult Model feedback re dishes - Great british or bake off style. You could watch a section from iplayer. Children use taught vocab for feedback.	Spirituality of Symbols - people wear rings Rings eternity rings, wedding rings	Adult Model feedback re dishes - Great british or bake off style. You could watch a section from iplayer. Children use taught vocab for feedback.
Designs and Designers	<i>See EYFS progression docs</i>	Palace - Sir Joseph Paxton Clifton Suspension - Brunel Marshall Brown Tina Louise Hunderup	Research into celebrity chefs and bbc recipes to find recipes. Look a reviews of recipes to aid selection	Luxor Temple Joseph Beuys Observe Nature	Research into celebrity chefs and bbc recipes to find recipes. Look a reviews of recipes to aid selection Think about which chefs are	Celtic design High Street Designs	Research into celebrity chefs and bbc recipes to find recipes. Look a reviews of recipes to aid selection Think about which chefs are particularly good for certain dietary requirements.

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			Think about which chefs are particularly good for certain dietary requirements		particularly good for certain dietary requirements.		
Function	<i>See EYFS progression docs</i>	of a building -why was the building made? of a room - what is the room used for? eg a room write a bridge - to span the river of materials - how stack, lego blocks	Consider how if it works for a picnic food, was it a good choice and why.	of a building -was to communicate core values to an illiterate society rather than just keep the building up. The size represented the relationship with the world. Columns dwarf people. They represented power. They also represent the Nile Reeds and the lost forests. of symbols within a building.	Consider how if it works for a picnic food, was it a good choice and why.	How jewellery makes you feel special. Aesthetic - is it functional do we need it in life. Is it Aesthetics that makes us different from animals?	Consider how if it works for a picnic food, was it a good choice and why.

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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 B 2022 - 23

Breadth of Study	Expressive Art and Design	Tiger masks Salt dough tea party food.	Nativity play props Firework pictures	Clay - characters from books	Vehicles modelling	Animal shadow puppets	Milk bottle Elmer Paper chain caterpillars Symmetrical butterfly prints.
	Cooking	Making bread	Planets out of fruit/vegetables	Salt dough creations	Transport biscuits	Fruit smoothies	Elmer - jelly and elephant sandwiches
Year 1&2 Breadth of Study	Art	Collage, Shape, colour mixed materials Dinosaurs	Sew What straight stitch Heat bonding aplique	Great Fire of London Paint, texture drama, layer, scale and movement. Painting fire and flames.	Large scale painting.	Produce Rolly Toy	
Year 3&4 Breadth of Study	Art	Collage - looking at foreground and background	Sew What learn a range of types of stitching Quilting	Greeks Painting, texture, drama scale and Movement	Painting and then painting with Mosaics	Produce a river creature with moving parts	
Year 5&6 Breadth of Study	Art	Collage -blitz looking at broken things	Sew What Learn 14 type of stitch Aplique	Painting, texture, drama scale and Movement Ancient Murals and wall art	Painting Mayan inspired symbols and making paint out of the environment.	Make a moving buggy.	

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Mapping of our Big Ideas within each phase for Cycle B

		T2	T5/6	T2	T5/6	T2	T5/6
	EYFS- N & R	KS1 1 - Year 1 and Year 2		LKS2 - Year 3 and Year 4		UKS2 - Year 5 and Year 6	
Cycle A		Sew what Straight Stitch Fusible adhesive applique bag	Roly Poly Toy	Sew What A range of stitch (5) Quilting - blanket for homeless	Moving River Creature	Sew What A range of (15) Stitch types Applique - usable christmas product	Moving Buggy
Design Process	<i>See EYFS progression docs</i>	Understand the design process from crop to cloth Design and image from the UK landscape. Using a range of skills and techniques to produce a surface decorated product with purpose	design and make a toy that rolls	Revisit the manufacturing process from farm to fashion. Look at the life cycle of a T- shirt. Research the American cotton industry and the invention of the cotton gin. Use American quilting techniques to design a usable quilt.	design and make an animal where a mechanism makes the mouth move	Revisit farms to fashion and discuss the social responsibilities of companies. Like food and shelter, affordable clothing is a basic necessity. Inspired by Animals of Kenya and research of Kenyan artist design and make an applique product that could sell as a christmas present.	Design and make a buggy that will move forwards and backwards
Technical Skills	<i>See EYFS progression docs</i>	straight stitch Cutting out applique shapes	cut, shape, join, wheels, axles	Progress from straight stitch to learning 5/10 new stitches. Quilting	evers, winding, pulleys, gears, cams, cranks,	Now learning up to 15 stitches and their decorative purpose. Applique	saw, drill, glue, axles, wheels, motors, measure, cut, join, circuits, components, programming

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		Fusing applique shapes together with heat. Applying this to a product eg a bag			sliders, drill, screws, nail, cut	Application of Applique onto a product	
Experience	<i>See EYFS progression docs</i>	Environmental impact on the manufacturing of textile products. Knowing where clothes come from. Social Conscience	Game, Enjoyment Does it work	Environmental impact on the manufacture of textile. Discuss why trade has gone from America to China - cheap labour. Is this Ethical?	Aesthetic	The link between what we buy and how things are produced. Consumer Choices. Basic needs for clothing. Ethical Trading.	Game, speed, enjoyment
Designs and Designers	<i>See EYFS progression docs</i>	Artist Carol Naylor - British Landscape applique artist.	look at rolling toys from the past and present	Mary Lee Bendolph	explore how cams, cranks and motors work on toys and in real life designs	Sophie Standing - Applique Artist works in Kenya	investigate the chassis and mechanisms of moving vehicles, including go-karts
Function	<i>See EYFS progression docs</i>	Decoration, Branding.	Speed Will it race? Aesthetic Durable	Quilt - warm for homeless person	Moving Mouth, Decorative	A product is aesthetic and sellable. Form over function	Game, Travel

Glossary of vocabulary used in our DT curriculum

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

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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.

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.

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	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.
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.

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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.

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.

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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.
	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.

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	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 throughout history, giving reasons for choices.	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.
	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.