Design Technology Progression

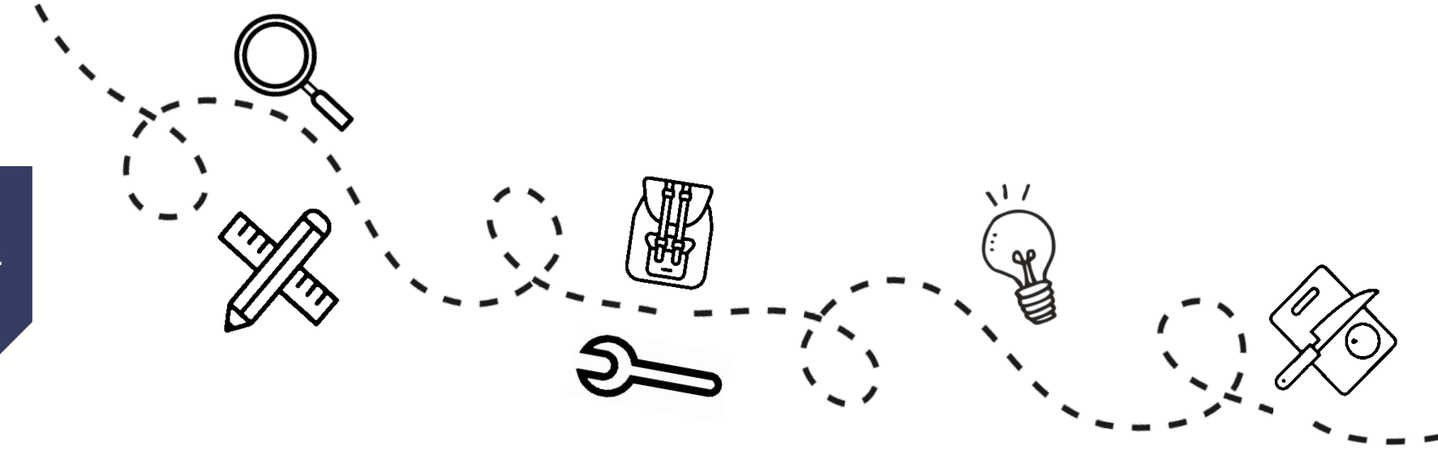
ST. MARY'S CE PRIMARY SCHOOL

Curriculum Goals

Global Diversity

Preparing for the Future

Taking Action



Intent

At St. Mary's, each DT unit is a coherently planned sequence of lessons to ensure teachers have progressively covered the knowledge, understanding and skills required in the National Curriculum. The intent is to ensure all pupils produce creative, imaginative work. Design and Technology aims to inspire children through a broad range of practical experiences to create innovative designs which solve real and relevant problems within a variety of different contexts. The iterative design process is fundamental and runs throughout each unit. This iterative process encourages children to identify real and relevant problems, critically evaluate existing products and then take risks and innovate when designing and creating solutions to the problems. As part of the iterative process, time is built in to reflect, evaluate and improve on prototypes using design criteria throughout to support this process. Opportunities are provided for children to evaluate key events and individuals who have helped shape the world, showing the real impact of design and technology on the wider environment and helping to inspire children to become the next generation of innovators.

Throughout our curriculum, we will consider our goals of enabling the children to consider global diversity, prepare them for their future and how to take action and be courageous advocates in the world in which we live.

Implementation

In order for children to know more and remember more in each area of DT studied, there is a structure to the lesson sequence whereby prior learning is always considered and opportunities for revision of facts and DT knowledge, understanding and skills are built into lessons to ultimately build a depth to children's understanding. Through revisiting and consolidating skills, our lessons help children build on prior knowledge alongside introducing new skills and challenge. The revision and introduction of key vocabulary is built into each lesson, and this is used throughout the curriculum so children can use it in context.

Throughout lessons, we intend to inspire pupils and practitioners to develop a love of Design and Technology and see how it has helped shaped the ever-evolving technological world they live in.

Impact

We want to ensure that Design and Technology is loved by teachers and pupils across school, therefore encouraging them to want to continue building on this wealth of skills and understanding, now and in the future. Impact can also be measured through key questioning skills built into lessons, assessment and summative assessments aimed at targeting next steps in learning. Teachers have high expectations and quality evidence can be presented in a variety of ways. All children use technical vocabulary accurately and pupils are expected to know, apply and understand the skills and processes taught and see themselves as designers, engineers etc....

EYFS		
Expressive Arts and Design (Exploring and Using Media and Materials)	**Expressive Arts and Design (Being Imaginative)**	**Physical Development (Moving and Handling)**
Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.	Children handle equipment and tools effectively, including pencils for writing.

Three and Four-Year-Olds	Physical Development		• Use large-muscle movements to wave flags and streamers, paint and make marks. • Choose the right resources to carry out their own plan. • Use one-handed tools and equipment, for example, making snips in paper with scissors.
	Personal, Social and Emotional Development		• Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them.
	Understanding the World		• Explore how things work.
	Expressive Arts and Design		• Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. • Explore different materials freely, to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Create closed shapes with continuous lines and begin to use these shapes to represent objects.
Reception	Physical Development		• Progress towards a more fluent style of moving, with developing control and grace. • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. • Use their core muscle strength to achieve a good posture • when sitting at a table or sitting on the floor.
	Expressive Arts and Design		• Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills.
ELG	Physical Development	Fine Motor Skills	• Use a range of small tools, including scissors, paintbrushes and cutlery.
	Expressive Arts and Design	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.

Key Stage 1 National Curriculum Expectations

Design
Pupils should be taught to:

- 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.

Make
Pupils should be taught to:

- 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.

Evaluate
Pupils should be taught to:

- explore and evaluate a range of existing products;
- evaluate their ideas and products against design criteria.

Technical Knowledge
Pupils should be taught to:

- 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.

Cooking and Nutrition
Pupils should be taught to:

- use the basic principles of a healthy and varied diet to prepare dishes;
- understand where food comes from.

Key Stage 2 National Curriculum Expectations

Design
Pupils should be taught to:

- 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.

Make
Pupils should be taught to:

- 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.

Evaluate
Pupils should be taught to:

- 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.

Technical Knowledge

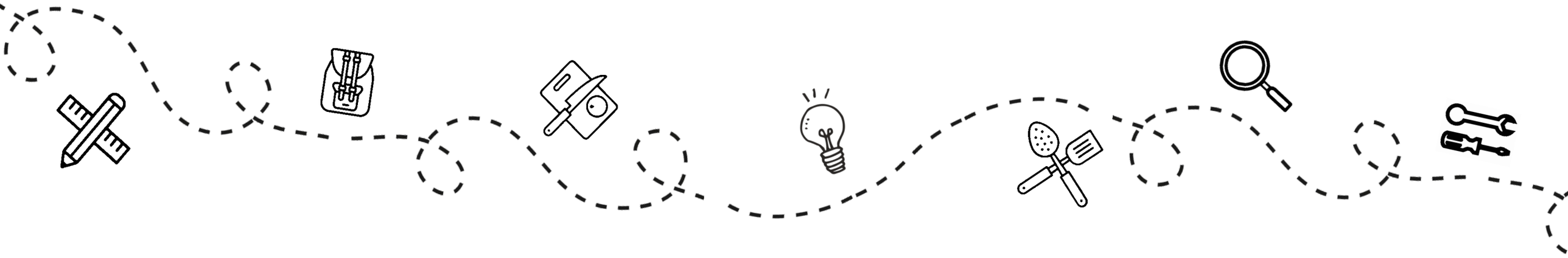
- apply their understanding of how to strengthen, stiffen and reinforce more complex structures;
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages];
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors];
- apply their understanding of computing to program, monitor and control their products.

Cooking and Nutrition
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.

DT Progression – Early Years

	Nursery	Reception
Design	• Make observations about the features of objects • Use their senses to explore and describe objects and materials • Develop ideas on which materials to use and what to make with them • Think of some ideas of their own • Use a comfortable grip with good control when holding pens and pencils.	• Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills. • Plan how best to approach a task
Make	• Explain what they are making • Make imaginative and complex small worlds • Select appropriate resources and tools • Use tools safely • Use one-handed tools and equipment, for example, making snips in paper with scissors. • Join different materials and textures	• Explain what they are making and what it is for • Explain which tools they are using and why • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. • Use a greater range of equipment and tools more independently
Evaluate	• Identify what they like and their success • Change their strategy as needed 	• Identify success and next steps • Change their strategy as needed • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Suggest simple ideas on how things could be improved



DT Progression – KS1

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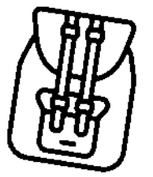
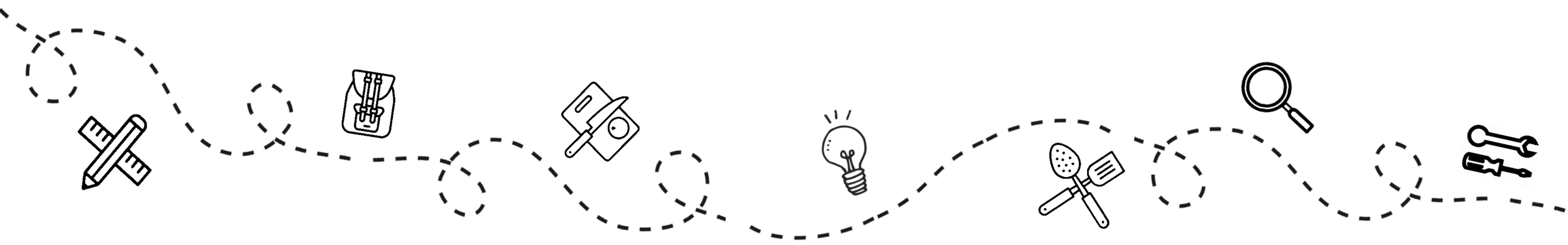
	KS1
Design	**KS1 Design and Technology National Curriculum** Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. Children design purposeful, functional, appealing products for themselves and other users based on design criteria. They generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.
	• use their knowledge of existing products and their own experience to help generate their ideas; • design products that have a purpose and are aimed at an intended user; • explain how their products will look and work through talking and simple annotated drawings; • design models using simple computing software; e plan and test ideas using templates and mock-ups; funderstand and follow simple design criteria; • work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment.
Make	**KS1 Design and Technology National Curriculum** 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 making. Children select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. They select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
	Planning • with support, follow a simple plan or recipe; • begin to select from a range of hand tools and equipment, such as scissors, graters, zesters, safe knives, juicer; • select from a range of materials, textiles and components according to their characteristics; Practical skills and techniques • learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures; • use a range of materials and components, including textiles and food ingredients; • with help, measure and mark out; • cut, shape and score materials with some accuracy; • assemble, join and combine materials, components or ingredients; • demonstrate how to cut, shape and join fabric to make a simple product; • manipulate fabrics in simple ways to create the desired effect; • use a basic running stich; • cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups; • begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations.
Evaluate	**KS1 Design and Technology National Curriculum** 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. Children explore and evaluate a range of existing products. They evaluate their ideas and products against design criteria.
	• explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations; • explain positives and things to improve for existing products; • explore what materials products are made from; • talk about their design ideas and what they are making; • as they work, start to identify strengths and possible changes they might make to refine their existing design; • evaluate their products and ideas against their simple design criteria; • start to understand that the iterative process sometimes involves repeating different stages of the process.



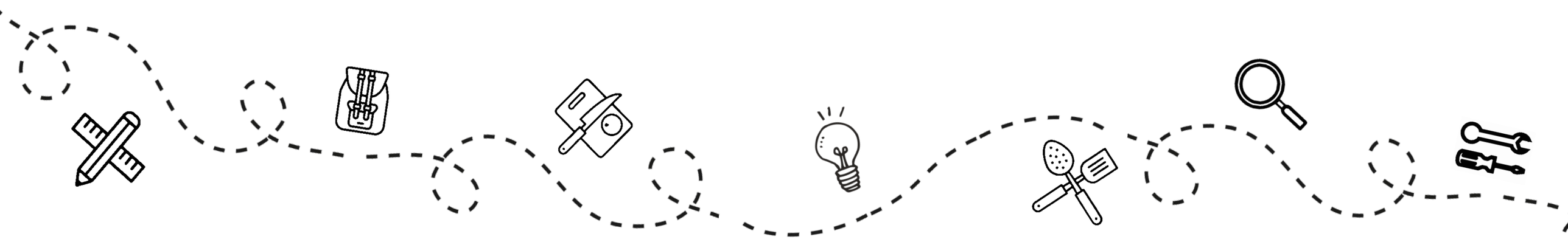
Technical Knowledge	**KS1 Design and Technology National Curriculum** Children build structures, exploring how they can be made stronger, stiffer and more stable. They explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.
	• build simple structures, exploring how they can be made stronger, stiffer and more stable; • talk about and start to understand the simple working characteristics of materials and components; • explore and create products using mechanisms, such as levers, sliders and wheels.
Cooking and Nutrition	**KS1 Design and Technology National Curriculum** Children use the basic principles of a healthy and varied diet to prepare dishes. They understand where food comes from.
	• explain where in the world different foods originate from; • understand that all food comes from plants or animals; • understand that food has to be farmed, grown elsewhere (e.g. home) or caught; • name and sort foods into the five groups in the Eatwell Guide; • understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why; • use what they know about the Eatwell Guide to design and prepare dishes.



DT Progression – KS2

ST. MARY'S CE PRIMARY SCHOOL

	LKS2	UKS2
Design	**KS2 Design and Technology National Curriculum** 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. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. Children 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. They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design.	
	• identify the design features of their products that will appeal to intended customers; • use their knowledge of a broad range of existing products to help generate their ideas; • design innovative and appealing products that have a clear purpose and are aimed at a specific user; • explain how particular parts of their products work; • use annotated sketches and cross-sectional drawings to develop and communicate their ideas; • when designing, explore different initial ideas before coming up with a final design; • when planning, start to explain their choice of materials and components including function and aesthetics; • test ideas out through using prototypes; • use computer-aided design to develop and communicate their ideas; • develop and follow simple design criteria; • work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment.	• use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market; • use their knowledge of a broad range of existing products to help generate their ideas; • design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user; • explain how particular parts of their products work; • use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas; • generate a range of design ideas and clearly communicate final designs; • consider the availability and costings of resources when planning out designs; • work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.



Make

KS2 Design and Technology National Curriculum

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 making.

Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately.

They 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.

Plan

- with growing confidence, carefully select from a range of tools and equipment, explaining their choices;
- select from a range of materials and components according to their functional properties and aesthetic qualities;
- place the main stages of making in a systematic order;

Practical skills and techniques

- learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures;
- use a wider range of materials and components, including construction materials and kits, textiles and mechanical and electrical components;
- with growing independence, measure and mark out to the nearest cm and millimetre;
- cut, shape and score materials with some degree of accuracy;
- assemble, join and combine material and components with some degree of accuracy;
- demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product;
- join textiles with an appropriate sewing technique;
- begin to select and use different and appropriate finishing techniques to improve the appearance of a product such as hemming, tie-dye, fabric paints and digital graphics.

Plan

- independently plan by suggesting what to do next;
- with growing confidence, select from a wide range of tools and equipment, explaining their choices;
- select from a range of materials and components according to their functional properties and aesthetic qualities;
- create step-by-step plans as a guide to making;

Practical skills and techniques

- learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures;
- independently take exact measurements and mark out, to within 1 millimetre;
- use a full range of materials and components, including construction materials and kits, textiles, and mechanical components;
- cut a range of materials with precision and accuracy;
- shape and score materials with precision and accuracy;
- assemble, join and combine materials and components with accuracy;
- demonstrate how to measure, make a seam allowance, tape, pin, cut, shape and join fabric with precision to make a more complex product;
- join textiles using a greater variety of stitches, such as backstitch, whip stitch, blanket stitch;
- refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.

Evaluate

KS2 Design and Technology National Curriculum

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.

Children investigate and analyse a range of existing products.

They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

They understand how key events and individuals in design and technology have helped shape the world.

- explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose;
- explore what materials/ingredients products are made from and suggest reasons for this;
- consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product;
- evaluate their product against their original design criteria;
- evaluate the key events, including technological developments, and designs of individuals in design and technology that have helped shape the world.

- complete detailed competitor analysis of other products on the market;
- critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make;
- evaluate their ideas and products against the original design criteria, making changes as needed.

Technical Knowledge

KS2 Design and Technology National Curriculum

Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

They understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].

They understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].

They apply their understanding of computing to program, monitor and control their products.

• understand that materials have both functional properties and aesthetic qualities; • apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; • understand and demonstrate how mechanical and electrical systems have an input and output process; • make and represent simple electrical circuits, such as a series and parallel, and components to create functional products; • explain how mechanical systems such as levers and linkages create movement; • use mechanical systems in their products.	• apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; • understand and demonstrate that mechanical and electrical systems have an input, process and output; • explain how mechanical systems, such as cams, create movement and use mechanical systems in their products; • apply their understanding of computing to program, monitor and control a product.

Cooking and Nutrition

KS2 Design and Technology National Curriculum

Children understand and apply the principles of a healthy and varied diet.

They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.

They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

• understand that materials have both functional properties and aesthetic qualities; • apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; • understand and demonstrate how mechanical and electrical systems have an input and output process; • make and represent simple electrical circuits, such as a series and parallel, and components to create functional products; • explain how mechanical systems such as levers and linkages create movement; • use mechanical systems in their products.	• apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; • understand and demonstrate that mechanical and electrical systems have an input, process and output; • explain how mechanical systems, such as cams, create movement and use mechanical systems in their products; • apply their understanding of computing to program, monitor and control a product.