Intent Statement

Design and Technology is an inspiring and practical subject, and at Newlands we intend to prepare children to deal with an ever-changing technological world, encouraging them to become creative and resourceful problem solvers, working both independently and as members of a team. Our Design and Technology curriculum 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 set of lessons. 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 Design 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. Our curriculum is planned to progressively cover the knowledge, understanding and skills required in the National Curriculum.

	KS1	LKS2	UKS2
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. **Children can:** - use their knowledge of existing products and their own experience to help generate their	**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. **Children can:** - 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;	**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. **Children can:** - 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

	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; -plan and test ideas using templates and mock-ups; -understand and follow simple design criteria; -work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment.	- 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.	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	**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. **Children can:** **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	**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. **Children can:** -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	**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. **Children can:** **Planning** - 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;

	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.	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.	**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	**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. **Children can:** -explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations; - explain positives and things to improve for existing products;	**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. **Children can:** - 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	**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. **Children can:** - complete detailed competitor analysis of other products on the market; -critically evaluate the quality of design,

	- 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.	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.	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	**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. **Children can:** - 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.	**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. **Children can:** -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.	**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. **Children can:** -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.
Cookin	**KS1 Design and Technology National**	**KS2 Design and Technology National Curriculum**	**KS2 Design and Technology National**

g and Nutritio n	**Curriculum** Children use the basic principles of a healthy and varied diet to prepare dishes. They understand where food comes from. **Children can:** - 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.	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. **Children can:** -start to know when, where and how food is grown (such as herbs, tomatoes and strawberries) in the UK, Europe and the wider world; - understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically; - with support, use a heat source to cook ingredients showing awareness of the need to control the temperature of the hob and/or oven; - use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking; - explain that a healthy diet is made up of a variety and balance of different food and drink, as represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes; -understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body; - prepare ingredients using appropriate cooking utensils; - measure and weigh ingredients to the nearest gram and millilitre; -start to independently follow a recipe; -start to understand seasonality.	**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. **Children can:** - know, explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world; - understand about seasonality, how this may affect the food availability and plan recipes according to seasonality; - understand that food is processed into ingredients that can be eaten or used in cooking; - demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source; - demonstrate how to use a range of cooking techniques, such as griddling, grilling, frying and boiling; - explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and preparing dishes; - adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma; - alter methods, cooking times and/or temperatures; -measure accurately and calculate ratios of ingredients to scale up or down from a recipe; -independently follow a recipe.

Term	KS1 (2022/23)	KS1 (2023/24)	LKS2 (2022/23)	LKS2 (2023/24)	UKS2 (2022/23)	UKS2 (2023/24)
1	ART Focus	ART Focus	ART Focus	ART Focus	ART Focus	ART Focus
2	Moving Pictures - ● I know that a slider can make a moving part go from side to side ● I know that a wheel can be used to make a picture move ● I know that a design is a plan that you can follow to make a product.	Pirates Packed Lunch	**Juggling balls (Design a set of juggling balls - tie die material?)** -I know how to colour and decorate a fabric - I know how to use running stitch to join 2 pieces of fabric - I know that an evaluation should include suggestions for improvement.	**Mechanical poster or learning toy (create a moving poster or toy using levers and linkages and oscillating parts** -I know that a mechanical system has components that act together to create a movement. -I know that a lever has an input motion and an output motion -I know that a prototype is a working model to find where improvements are needed.	**Felt phone case** -i know that a design must consider function and be pleasing to look at - i know how to sew different stitches, including running stitch, cross stitch and back stitch -I know that a button, velcro, zip and ribbon can be used as a fastening.	**Super seasonal cooking** - I know that seasonality means that fruits and vegetables only grow outside at certain times of the year - I know that different vegetables can be combined to make healthy soup - I know how to use knives and kitchen equipment safely
3	ART Focus	ART Focus	ART Focus	ART Focus	ART Focus	ART Focus
4	Dips and Dippers (Food Tech) ● I know that a healthy diet includes fruit	Fabric Bunting - Textiles	**Battery operated lights (Design a model with a light and switch)**	**Great Bread bake off (Design a flavoured bread)** - I know that foods need different	**Global food** (design a simple curry meal, both meat and vegetarian option)	**Program adventures** (Design a game plan and a floor mat with obstacles for a

	and vegetables as well as other food groups ● I know how to use a knife safely to prepare vegetables ● I know that evaluating a product helps to find ways to make it better.		- I know how technology is used in a home - I know that a switch works by breaking and completing an electrical circuit - I know how to communicate my ideas in pictures, symbols and words	temperatures to cook properly, and how to set a temperature on the oven - I know that a recipe gives important instructions to be successful -I know that you use scales and measuring cups and spoons to measure ingredients precisely	-I know that a balanced meal has ingredients from the 5 different food groups - I know that fruit and vegetables are harvested, meat is reared and fish is caught. - I know how to work hygienically in the kitchen and why it is important to do so.	Beebot) - I know that designs must show cross-sectional sketches and annotations to show specific features. - i know that there is a correct joining method for different materials - I know that materials should be chosen according to their properties.
5	ART Focus	ART Focus	ART Focus	ART Focus	ART Focus	ART Focus
6	Fabric Faces (Textiles) ● I know that a template can be used to cut out careful pieces of fabric ● I know that you can join two pieces of fabric by	Sensational Salads (food Tech)	**Edible garden (prepare a meal from ingredients you can grow in your garden)** - I know that basil is a herb that is used to make Pesto - I know that strawberries are grown in the UK in summer. - I know that	**Fly a kite** -I know that a kite needs to be made from light material (not heavy) - I know that a kite needs a strong, stiff structure - I know how to safely and accurately use tools to cut and join materials	**Marvellous marble run structures** I know that triangles are used to strengthen structures - I know materials and joining methods can be chosen for aesthetic reasons as well as	**Autominom Animals** **Creating a moving animal toys** - I know that a cam moves back and forwards to create a movement - I know that a cam moves a follower I know that smoothing and sanding down edges

	sewing and with glue ● I know that different fabrics have different properties and uses.		Tomatoes can be used in sauces and in salads		functional - I know that interative design is when you constantly evaluate and adapt your design as you work.	of a project is called finishing

EYFS
Children in Reception will learn to… ● 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.
EYFS Design Projects
Construction area challenges, shelters, Puppets, Preparing snacks, plant watering design, recycled musical instrument

KS1
● 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 ○ have own ideas and plan what to do next ○ explain what I want to do and describe how I may do it ○ explain purpose of product, how it will work and how it will be suitable for the user ○ describe design using pictures, words, models, diagrams, begin to use ICT ○ design products for myself and others following design criteria ○ choose best tools and materials, and explain choices ○ use knowledge of existing products to produce ideas
● explore and evaluate a range of existing products ● evaluate their ideas and products against design criteria ○ describe what went well, thinking about design criteria ○ talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion ○ evaluate how good existing products are ○ talk about what I would do differently if I were to do it again and why
● build structures, exploring how they can be made stronger, stiffer and more stable ○ measure materials ○ describe some different characteristics of materials ○ join materials in different ways ○ use joining, rolling or folding to make it stronger ○ use own ideas to try to make product stronger ● explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. ○ use levers or slides ○ begin to understand how to use wheels and axles
● use the basic principles of a healthy and varied diet to prepare dishes

- understand where food comes from.
    - explain hygiene and keep a hygienic kitchen
    - describe properties of ingredients and importance of varied diet
    - say where food comes from (animal, underground etc.)
    - describe how food is farmed, home-grown, caught
    - draw eat well plate; explain there are groups of food
    - describe “five a day”
    - cut, peel and grate with increasing confidence

KS1 Design Projects

Moving pictures, dips and dippers, fabric faces,

KS1 skills

- Cut, peel or grate ingredients safely and hygienically.
- Measure or weigh using measuring cups or electronic scales.
- Assemble or cook ingredients.
- Cut materials safely using tools provided.
- Measure and mark out to the nearest centimetre.
- Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).
- Demonstrate a range of joining techniques (such as glueing, hinges or combining materials to strengthen).
- Shape textiles using templates.
- Join textiles using running stitch.
- Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).
- Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).
- Model designs using software.
- Use materials to practise drilling, screwing, glueing and nailing materials to make and strengthen products.
- Create products using levers, wheels and winding mechanisms.
- Design products that have a clear purpose and an intended user.
- Make products, refining the design as work progresses.
- Use software to design.
- Explore objects and designs to identify likes and dislikes of the designs.

- Suggest improvements to existing designs.
- Explore how products have been created.

LKS2

- 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
    - use research for design ideas
    - show design meets a range of requirements and is fit for purpose
    - begin to create own design criteria
    - have at least one idea about how to create product and suggest improvements for design
    - produce a plan and explain it to others
    - say how realistic the plan is
    - include an annotated sketch
    - make and explain design decisions considering availability of resources
    - explain how product will work
    - make a prototype
    - begin to use computers to show design

- 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
    - select suitable tools and equipment, explain choices in relation to required techniques and use accurately
    - select appropriate materials, fit for purpose; explain choices *
    - work through plan in order
    - realise if product is going to be good quality
    - measure, mark out, cut and shape materials/components with some accuracy
    - assemble, join and combine materials and components with some accuracy
    - apply a range of finishing techniques with some accuracy

- 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
    - refer to design criteria while designing and making
    - use criteria to evaluate product
    - begin to explain how I could improve original design
    - evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose
    - discuss by whom, when and where products were designed
    - research whether products can be recycled or reused
    - know about some inventors/designers/engineers/chefs/ manufacturers of ground-breaking products

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
    - measure carefully to avoid mistakes
    - attempt to make product strong
    - continue working on product even if original didn't work
    - make a strong, stiff structure
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
    - select most appropriate tools / techniques
    - explain alterations to product after checking it
    - grow in confidence about trying new / different ideas.
    - use levers and linkages to create movement
    - use pneumatics to create movement
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
    - use number of components in circuit
- apply their understanding of computing to program, monitor and control their products.
    - program a computer to control product
    - think about user when choosing textiles
    - think about how to make product strong
    - begin to devise a template
    - explain how to join things in a different way
    - understand that a simple fabric shape can be used to make a 3D textiles project

- 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.
    - explain how to be safe/hygienic
    - think about presenting product in interesting/ attractive ways
    - understand ingredients can be fresh, pre-cooked or processed
    - begin to understand about food being grown, reared or caught in the UK or wider world
    - describe eat well plate and how a healthy diet=variety / balance of food and drinks
    - explain importance of food and drink for active, healthy bodies
    - prepare and cook some dishes safely and hygienically
    - use some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking

LKS2 Projects

LKS2 Skills

- Prepare ingredients hygienically using appropriate utensils.
- Measure ingredients to the nearest gram accurately.
- Follow a recipe.
- Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).
- Cut materials accurately and safely by selecting appropriate tools.
- Measure and mark out to the nearest millimetre.
- Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).
- Select appropriate joining techniques.
- Understand the need for a seam allowance.
- Join textiles with appropriate stitching.
- Select the most appropriate techniques to decorate textiles.
- Create series and parallel circuits.
- Control and monitor models using software designed for this purpose.

- Choose suitable techniques to construct products or to repair items.
- Strengthen materials using suitable techniques.
- Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).
- Design with purpose by identifying opportunities to design.
- Make products by working efficiently (such as by carefully selecting materials).
- Refine work and techniques as work progresses, continually evaluating the product design.
- Use software to design and represent product designs.
- Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.
- Improve upon existing designs, giving reasons for choices.
- Disassemble products to understand how they work.

UKS2

- 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
    - draw on market research to inform design
    - use research of user's individual needs, wants, requirements for design
    - identify features of design that will appeal to the intended user
    - create own design criteria and specification
    - come up with innovative design ideas
    - follow and refine a logical plan
    - use annotated sketches, cross sectional planning and exploded diagrams
    - make design decisions, considering, resources and cost
    - clearly explain how parts of design will work, and how they are fit for purpose
    - independently model and refine design ideas by making prototypes and using pattern pieces
    - use computer-aided designs

- 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
    - use selected tools and equipment precisely
    - produce suitable lists of tools, equipment, materials needed, considering constraints
    - select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics
    - create, follow, and adapt detailed step-by-step plans
    - explain how product will appeal to audience; make changes to improve quality
    - accurately measure, mark out, cut and shape materials/ components
    - accurately assemble, join and combine materials/components
    - accurately apply a range of finishing techniques
    - use techniques that involve a number of steps
    - be resourceful with practical problems

- 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
    - evaluate quality of design while designing and making; is it fit for purpose?
    - keep checking design is the best it can be
    - evaluate ideas and finished product against specification, stating if it’s fit for purpose
    - test and evaluate final product; explain what would improve it and the effect different resources may have had
    - do thorough evaluations of existing products considering: how well they’ve been made, materials, whether they work, how they’ve been made, fit for purpose
    - evaluate how much products cost to make and how innovative they are
    - research and discuss how sustainable materials are
    - consider the impact of products beyond their intended purpose
    - discuss some key inventors/designers/ engineers/ chefs/ manufacturers of groundbreaking products

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- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
    - select materials carefully, considering intended use of the product, the aesthetics and functionality
    - explain how product meets design criteria
    - reinforce and strengthen a 3D frame
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
    - refine product after testing, considering aesthetics, functionality and purpose

○ incorporate hydraulics and pneumatics ○ be confident to try new / different ideas ○ use cams, pulleys and gears to create movement ● understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] ○ use different types of circuit in product ○ think of ways in which adding a circuit would improve product ○ program a computer to monitor changes in environment and control product ● apply their understanding of computing to program, monitor and control their products. ○ think about user's wants/needs and aesthetics when choosing textiles ○ make product attractive and strong ○ make a prototype ○ use a range of joining techniques ○ think about how product might be sold ○ think carefully about what would improve product ○ understand that a single 3D textiles project can be made from a combination of fabric shapes.
● 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 ○ understand a recipe can be adapted by adding / substituting ingredients ○ explain seasonality of foods ○ learn about food processing methods ○ name some types of food that are grown, reared or caught in the UK or wider world ○ adapt recipes to change appearance, taste, texture or aroma. ○ describe some of the different substances in food and drink, and how they can affect health ○ prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of heat source ○ use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.
UKS2 projects
UKS2 skills

- Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms).
- Measure accurately and calculate ratios of ingredients to scale up or down from a recipe.
- Demonstrate a range of baking and cooking techniques.
- Create and refine recipes, including ingredients, methods, cooking times and temperatures.
- 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).
- 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).
- Create objects (such as a cushion) that employ a seam allowance.
- Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration).
- 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).
- Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).
- Write code to control and monitor models or products.
- Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).
- Convert rotary motion to linear using cams.
- Use innovative combinations of electronics (or computing) and mechanics in product designs.
- Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).
- Make products through stages of prototypes, making continual refinements.
- Ensure products have a high quality finish, using art skills where appropriate.
- Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.
- Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.
- Create innovative designs that improve upon existing products.
- Evaluate the design of products so as to suggest improvements to the user experience.