Nourishing the fitrah of each unique child

Design and Technology Policy

"Verily, Allaah is beautiful and He loves beauty…."
(Saheeh Muslim ,131)

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Design & Technology Policy

Design and Technology prepares children to participate in tomorrow's rapidly changing technologies. It calls for them to be creative problem solvers, as individuals and as members of a team. It is a practical activity which spans the curriculum, drawing on and linking a range of subjects. It involves developing ideas in response to needs and applying practical skills in order to design and make quality products fit for their intended purpose.

Intent

At Unique Academy, Design and Technology is delivered through a series of a coherently planned sequence of lessons to ensure progressive covers the knowledge, understanding and skills required in the National Curriculum across Key Stage 1 and Key Stage 2. We aim for Design and Technology 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.

Pupils are taken through a design process which encourages them 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. 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 pioneers.

Implementation

At Unique Academy, Design and Technology skills and understanding are built into all lessons. The revision of ideas are also built into lessons as part of good practice and ultimately helps to build a depth to children's understanding. Through revisiting and consolidating skills, lessons help children build on prior knowledge alongside introducing new skills, knowledge and challenge. Revision and introduction of key vocabulary are built into each lesson. This vocabulary is then included in display materials and additional resources to ensure that children are allowed opportunities to repeat and revise this knowledge. Through our lessons, we intend to inspire pupils to develop a love of Design and Technology and see how it has helped shape the ever-evolving technological world they live in.

Impact

The impact of using the full range of resources, including display materials, will be seen across our school with an increase in the profile of Design and Technology. The learning environment across the school will be more consistent with design and technology technical vocabulary displayed, spoken and used by all learners. Whole-school and parental engagement will be improved through the use of design and technology-specific home learning tasks and opportunities suggested in lessons and overviews for wider learning. We want to ensure that Design and Technology is loved by pupils across school, therefore encouraging them 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 and summative Assessment outcomes.

Organising Teaching and Learning

Early Years

In the Early Years, children access Design and Technology within their provision. They are provided with a range of materials to create and make. Teaching staff encourage children to think about what they are creating, why they are creating it and how they can overcome any problems encountered. Children are also encouraged to investigate how things work and why they have been created that way. Children also draw, build and make things which fulfil a function.

Key Stage 1
During Key stage 1, children learn the knowledge and skills needed to design and make products for a range of relevant contexts. Children are provided with opportunities to design and test products that are purposeful and appealing. Children will also carefully select tools and materials which are the most suitable to make their product. Throughout the process, children will evaluate their products against existing products and a design criteria. Children will also develop the technical knowledge needed to build structures which are stronger and more stable and will also use a range of mechanisms. Children will also develop an understanding of where food comes from and how to use the basic principles of a healthy diet to prepare their own simple dishes.

Key Stage 2
During Key stage 2 children develop further knowledge and skills to enable them to design and make purposeful and quality products in different contexts. They will be able to research how existing products work and use this to develop designs and products to meet a design brief. Children will also be able to produce more detailed, annotated designs and will be able to test and refine their ideas. Children will work with a wider range of tools and materials according to their function and properties. Children will develop the technical knowledge required to make their products work effectively. Children will further develop their evaluating skills and will evaluate the effectiveness and quality of their products. They will use this to improve their work. Children will also develop an understanding of a healthy and varied diet and will be able to prepare and cook a range of dishes.

D & T Planning

Unique Academy uses Cornerstones Design and Technology scheme and planning. The scheme ensures the full coverage of the National Curriculum through the teaching of the different topics. The curriculum is focused on progression of pupil's knowledge and skills, which is built upon for each year group.

Teacher's Role

At Unique Academy, teachers will aim to give every child the opportunity to experience success by structuring tasks to suit the child's needs.
Teachers will also provide focused tasks that develop a range of techniques, skills, processes, and knowledge through class work. Teachers will also provide a working environment where the children are aware of safety issues which apply when working with tools.

Role of the Coordinator

The Headteacher will oversee the provision of Design and Technology and will liaise with staff members in delivering the National Curriculum. They will also:

- Monitor Design and Technology within the school e.g. subject scrutiny.
- To attend relevant inset courses, keep up to date with new developments and inform staff.
- To audit resources and equipment regularly, ensuring resources are available and appropriate to the needs of the staff.
- To ensure that Design Technology keeps an appropriate profile within the school e.g. through displays and carrying out curriculum walks.

The school administrator will keep a portfolio for Design and Technology that will include photographs of pupils at work, learning walk reports, examples of pupil's work etc.

Assessment outcomes

Assessment outcomes in Design and Technology will be based on formative Assessment. Teachers will use our Cornerstones Curriculum Maestro system to record whether the lesson's learning objectives have been 'Met' or 'Not Met'. At the end of the academic year, children's attainment and progress will be formally recorded and shared with parents in the end of year report.

Resources

Specific tools and equipment are located in the storage room. Dangerous tools are kept in the staffroom. It is the responsibility of each class teacher to collect resources and then return them after use. If any resources become broken during use, the school administrator needs to be informed as soon as possible. Resources will be constantly reviewed and updated, within the restraints of the school budget, to meet National Curriculum demands.

Equal Opportunities

At Unique Academy, we aim is to provide Design and Technology lessons for all children to achieve, regardless of gender, social and cultural backgrounds or special needs. Work will be planned so that all children can take part in lessons fully and effectively.

Health and Safety

At Unique Academy, to maintain Health and Safety protocols:

- Teachers will teach the safe use of tools and equipment and insist on good practice.
- Children will be taught how to take steps to control risks.
- Children will be strictly supervised in their use of equipment at all times.
- Glue guns will only be used under adult supervision.

Food Hygiene

Children and staff will take care to undertake appropriate hand washing and other hygiene related activities prior to preparing food.
Children and staff working with food will wear aprons designed for cooking.
Cooking equipment will be washed up in the kitchen area.

Design & Technology Curriculum Map

Class	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Nursery	Match it Emergency vehicles Teamwork	Make a cuddle pet Rocket builders Space travel Constellations Moon buggies	Dinosaur island Turtles Dinosaur trails Build a dinosaur Nests	Loose parts play Build it	Sun hats Shades of yellow Homes for who? Summer tech	Pattern time Buildings around the world
	All sewn up Harvest time Conker rolling, creatures and run Seed patterns and shakers Wrap it around Weaving	Animal tales Building bridges for Nursery Royal workshop Fantasy homes	Puddles Rainmakers Rainbow town	Frozen Icy dens Ice building	Echoes Symmetrical buildings Mirrored building	Floating and sinking Boats
Reception	Boxes What's inside? Planes, trains and automobiles Thread it	Busy machines Build it! for Reception Design a robot Terrific Transformers	Down on the farm Seed shakers	Toys from the past Old clothes to new clothes Shades of grey Old buildings Horses and carts	Animal homes Feathered friends Swamps Pet homes	Star prints All join in!
	What we'll build Building sites Builders Building bridges Towers Block houses Make a roof	Let's talk Move it! Finger puppets Pop ups for Reception Paper bag puppets Who lives here? How does it move?	Spring flowering plants Ducks and ducklings Pastel shades Nests	King of the castle London Bridge Bus making Oranges and lemons Silver bells and cockle shells	Wonderful webs Matisse's snail Minibeasts Incredible insects Slimy creatures Tunnels	Frame it One more step! Mazes Building together
Cycle A Year 1 / 2		**Shade and Shelter** Investigating shelters Designing shelters Building prototype shelters Designing a play den Building a play den Evaluation		**Taxi!** Investigating wheels, axles and chassis Experimenting Exploring axles Designing our taxis Making out taxis Evaluating our taxis		**Chop, Slice and Mash** Investigating sources of food Preparing fruits and vegetables Exploring salads Designing a supermarket sandwich Making a supermarket sandwich
Cycle B Year 1 / 2		**Remarkable Recipes** Sources of food and tools used for food preparation Design criteria and devise recipes		**Beach Hut** Making and strengthening structures Different ways of joining materials		**Cut, Stitch and Join** Everyday fabric products Cath Kidston Sewing patterns
Cycle A Year 3 / 4		**Cook Well, Eatwell** Healthy balanced diets Using cooking appliances Savoury dishes: Ratatouille Preparation techniques		**Making It Move** Machines and mechanisms Mechanical systems Cams Tools and equipment		**Greenhouse** Significant designers Greenhouse design Strengthening structures Investigating sheet materials
Cycle B Year 3 / 4		**Fresh Food, Good Food** Fresh food Food packaging Diagrams and prototypes		**Functional and Fancy Fabrics** Exploring fabrics Design features of familiar products Significant designer:		**Tomb Builders** Mechanical systems Simple machines Construction materials

		Fresh, healthy snacks		William Morris Sewing hems		
Cycle A Year 5 / 6		**Moving Mechanisms** Mechanical systems Pneumatics Product design Product Evaluation		**Eat the Seasons** Seasonality Nutritional Food Balanced diet Food hygiene Dicing, peeling and grating Taste test		**Architecture** Architecture over time Greek architecture Significant designer or inventor Complex structures CADs
Cycle B Year 5 / 6		**Food for Life** Processed foods Packaging Hygiene Homemade food Whole food Recipes Savoury dishes		**Engineer** Significance of a designer or inventor Bridge structures Characteristics of materials Frameworks		**Make Do and Mend** Make Do and Mend campaign Deconstruct Stitch Repair

The Early Learning Goals that link most closely to the Design and Technology National Curriculum.

Physical Development (Fine Motor Skills)

Children handle equipment and tools effectively, including pencils for writing.

Expressive Arts and Design (Creating with Materials)

Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Expressive Arts and Design (Being Imaginative and Expressive)

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.

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.

Design		Make	
KS1	**LKS2**	**KS1**	**LKS2**
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: a use their knowledge of existing products and their own experience to help generate their ideas; b design products that have a purpose and are aimed at an intended user; c explain how their products will look and work through talking and simple annotated drawings; d design models using simple computing software; e plan and test ideas using templates and mock-ups; f understand and follow simple design criteria; g work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment.	**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: a identify the design features of their products that will appeal to intended customers; b use their knowledge of a broad range of existing products to help generate their ideas; c design innovative and appealing products that have a clear purpose and are aimed at a specific user; d explain how particular parts of their products work; e use annotated sketches and cross-sectional drawings to develop and communicate their ideas; f when designing, explore different initial ideas before coming up with a final design; g when planning, start to explain their choice of materials and components including function and aesthetics; h test ideas out through using prototypes; i use computer-aided design to develop and communicate their ideas (see note on p. 1); j develop and follow simple design criteria; k work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment.	**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 a with support, follow a simple plan or recipe; b begin to select from a range of hand tools and equipment, such as scissors, graters, zesters, safe knives, juicer; c select from a range of materials, textiles and components according to their characteristics; Practical skills and techniques d learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures; e use a range of materials and components, including textiles and food ingredients; f with help, measure and mark out; g cut, shape and score materials with some accuracy; h assemble, join and combine materials, components or ingredients; i demonstrate how to cut, shape and join fabric to make a simple product; j manipulate fabrics in simple ways to create the desired effect; k use a basic running stich; l cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups; m begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations.	**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 a with growing confidence, carefully select from a range of tools and equipment, explaining their choices; b select from a range of materials and components according to their functional properties and aesthetic qualities; c place the main stages of making in a systematic order; Practical skills and techniques d learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures; e use a wider range of materials and components, including construction materials and kits, textiles and mechanical and electrical components; f with growing independence, measure and mark out to the nearest cm and millimetre; g cut, shape and score materials with some degree of accuracy; h assemble, join and combine material and components with some degree of accuracy; i demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product; j 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.

Evaluate		Technical Knowledge	
KS1	**LKS2**	**KS1**	**LKS2**
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: a explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations; b explain positives and things to improve for existing products; c explore what materials products are made from; d talk about their design ideas and what they are making; e as they work, start to identify strengths and possible changes they might make to refine their existing design; f evaluate their products and ideas against their simple design criteria; g start to understand that the iterative process sometimes involves repeating different stages of the process.	**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: a explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose; b explore what materials/ingredients products are made from and suggest reasons for this; c 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; d evaluate their product against their original design criteria; e evaluate the key events, including technological developments, and designs of individuals in design and technology that have helped shape the world.	**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: a build simple structures, exploring how they can be made stronger, stiffer and more stable; b talk about and start to understand the simple working characteristics of materials and components; c 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: a understand that materials have both functional properties and aesthetic qualities; b apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; c understand and demonstrate how mechanical and electrical systems have an input and output process; d make and represent simple electrical circuits, such as a series and parallel, and components to create functional products; e explain how mechanical systems such as levers and linkages create movement; f use mechanical systems in their products.

Cooking and nutrition	
KS1	**LKS2**
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. Children can: a explain where in the world different foods originate from; b understand that all food comes from plants or animals; c understand that food has to be farmed, grown elsewhere (e.g. home) or caught; d name and sort foods into the five groups in the Eatwell Guide; e understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why; f use what they know about the Eatwell Guide to design and prepare dishes.	**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. Children can: a start to know when, where and how food is grown (such as herbs, tomatoes and strawberries) in the UK, Europe and the wider world; b understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically; c with support, use a heat source to cook ingredients showing awareness of the need to control the temperature of the hob and/or oven; d use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking; e 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; f understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body; g prepare ingredients using appropriate cooking utensils; h measure and weigh ingredients to the nearest gram and millilitre; i start to independently follow a recipe; j start to understand seasonality.

Cycle A Year 1 / 2 Design & Technology Scheme of Work
Autumn 2 - Shade and Shelter

Overview:
This project teaches children about the purpose of shelters and their materials. They name and describe shelters and design and make shelter prototypes. Children then design and build a play den as a group and evaluate their completed product.

Vocabulary:
Evaluation:
Change, Criteria, Difficulty, Evaluate, Evaluation, Improve, Strength, Weakness.
Generation of Ideas:
Design, Design criteria, Drawing, Frame, Function, Idea, Label, Material, Plan, Purpose, Shape, Size.
Compare and contrast:
Compare, Different, Similar.
Everyday products:
Function, Permanent, Protection, Purpose, Shelter, Structure, Temporary.
Structures:
Appearance, Construction, Design, Entry point, Finish, Functionality, Joining, Model, Product, Roof, Safety, Structure, Tools, Wall.
Materials for purpose: Brick, Construction, Fabric, Rope, Stick, Tarpaulin, Wooden cane.

Assessment outcomes:
Give children design criteria for building their dens and ask them to evaluate their ideas and products against design criteria. Allow them to talk about their own and each other's work, identifying strengths or weaknesses and offering support.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage: Investigating shelters **Lesson 1: Investigating shelters** P. of Study Design and technology Evaluate 5 Explore and evaluate a range of existing products. Knowledge Year 1 Two products can be compared by looking at a set of criteria and scoring both products against each one. Knowledge Year 1 Everyday products are objects that are used routinely at home and school, such as a toothbrush, cup or pencil. All products are designed for a specific purpose. Specific knowledge Year 1 A shelter is a structure designed to give protection from weather or danger. A bus shelter, office block, garage, carport, tent, bird table, shed, conservatory, house, kennel and caravan are all examples of shelters. A shelter can be permanent, like a house or garage, or temporary, like a tent or gazebo. Skill Year 1 Describe the similarities and differences between two products. Skill Year 1 Name and explore a range of everyday products and describe how they are used.	Introduce the words 'shade' and 'shelter'. Ask what the words mean and create a class definition for each. Encourage the children to decide why humans and animals need shade and shelter, highlighting the need for warmth and protection from the weather, and then ask for examples of structures that provide this. Take the children on an exploration walk to spot and investigate shelters in the school grounds and local environment. Give each child a Shelters spotting sheet to record what they see and talk about the purposes of shelters, their materials, how they are made strong and sturdy, whether the structures are temporary or permanent and their similarities and differences. Take photographs of shelters during the journey and use the photographs and children's observations to make a shelters display.	• Cameras or tablets • Clipboards
Develop **Lesson 1: Properties of materials** P. of Study Science 2 Year 1 Materials Distinguish between an object and the material from which it is made. 2 Year 1 Materials Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Knowledge Year 1 A material is what an object is made from. Everyday materials include wood, plastic, glass, metal, water, rock, brick, paper and fabric. Skill(s) Year 1 Identify and name what an object is made from, including wood, plastic, glass, metal, water and rock.	Use the Materials picture cards to help the children name materials and describe their properties using adjectives, such as strong, absorbent, waterproof and transparent. Ask questions about the materials and show the children real examples to reinforce their understanding. Show the children photographs taken during the previous lesson or use the pictures on the Shelters presentation. Ask the children to identify the materials that each shelter is made from and explain why they think those materials were used. Reasons could include properties of materials, such as strength, durability and flexibility, the use of the shelter or whether it is temporary or permanent. After the discussion, ask the children to complete one of	• Examples of real materials, including glass, wood, plastic, stone, clay, metal and fabrics (including oilcloth and nylon)

	the Shelter materials recording sheets to consolidate their understanding and share their answers at the end of the session.	
Lesson 2: Designing shelters P. of Study Design and technology 4 Year 1 Design Design purposeful, functional, appealing products for themselves and other users based on design criteria. 4 Year 1 Design Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. Knowledge Year 1 Design criteria are the explicit goals that a project must achieve. Skill(s) Year 1 Create a design to meet simple design criteria.	Explain to the children that they are going to draw some designs of shelters for specific purposes and decide which materials they would use. Model this using one of the Shelter design recording sheets, reading the design criteria and drawing and labelling a design on the whiteboard. Let the children choose which recording sheet they would like to complete and encourage them to draw and label their design. At the end of the session, ask the children to talk about their designs and how they have met the design criteria. Encourage the children to evaluate their designs and decide if they would be strong, sturdy and fit for purpose.	
Lesson 3: Building prototype shelters P. of Study Design and technology 7 Year 1 Technical Build structures, exploring how they can be made stronger, stiffer and more stable. 3 Year 1 Make Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Knowledge Year 1 Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink. Year 1 Different materials are suitable for different purposes, depending on their specific properties. For example, glass is transparent, so it is suitable to be used for windows. Year 1 A structure should have strong, sturdy supports that are joined so that they do not move. The roof and walls should have a covering for protection against the weather, and there should be an entry point. Skill(s) Year 1 Construct simple structures, models or other products using a range of materials. Year 1 Select and use a range of materials, beginning to explain their choices.	Provide a variety of construction kits, junk modelling materials and fabrics. Ask the children to build a small model of a shelter, either from one of their drawn designs from the previous session or a new idea. Ensure that the children know what the product is, who it is for and how it would be used. Encourage them to make sturdy structures and use sticky or masking tape for joining. As they work, the children should think about the functionality and the finished appearance of their shelter. At the end of the session, film the children talking about and evaluating their shelter.	• Construction kits • Junk modelling materials • Fabrics • Sticky or masking tape
Innovate **Lesson 1: Designing a play den** P. of Study Design and technology 4 Year 1 Design Design purposeful, functional, appealing products for themselves and other users based on design criteria. 4 Year 1 Design Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. 3 Year 1 Make Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Knowledge Year 1 Design criteria are the explicit goals that a project must achieve. Year 1 Different materials are suitable for different purposes, depending on their specific properties. For example, glass is transparent, so it is suitable to be used for windows. Year 1 A play den is a shelter, usually built outside. It is a temporary structure made from found or readily available materials. It can be used for imaginative play or to provide protection from the weather. Skill(s) Year 1 Create a design to meet simple design criteria. Year 1 Select and use a range of materials, beginning to explain their choices.	Working in small groups with adult support, ask the children to design and make a play den. Share the Play den design presentation with the children and show them the materials and fabrics available, using the Play den design teacher information as a guide. Encourage the children to discuss their design ideas and draw and label a picture of their design. Ask the children to feedback their ideas, explaining how they have achieved the design criteria and encourage them to ask and answer questions, such as 'How will you attach the fabric to the poles? Would it be tall enough for children to stand in? How do you get in and out? Will the crates be sturdy enough, or might they fall over?' Gather ideas from each child's plan and come to an agreement about how the den will be built.	• Large scale den construction kits • Fabrics • Large scale junk modelling materials, including cardboard and plastic • Clips, clothes pegs and other joining devices

Lesson 2: Building a play den P. of Study Breadth Design and technology 2 Year 1 Aims Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. 7 Year 1 Technical Build structures, exploring how they can be made stronger, stiffer and more stable. Knowledge Year 1 Rules are made to keep people safe from danger. Safety rules include always listening carefully and following instructions, using equipment only as and when directed, wearing protective clothing if appropriate and washing hands before touching food. Year 1 Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink. Skill(s) Year 1 Follow the rules to keep safe during a practical task. View progression Year 1 Construct simple structures, models or other products using a range of materials.	Work with the children to construct their agreed play dens in groups, using the Play den design teacher information for guidance. Encourage the children to think about the order in which they will build their dens and how they will create and strengthen the frame and secure other materials and fabric. Guide the children as they work, asking them to evaluate their ideas and encourage them to make changes as necessary. As they end their task, ask them to think about the finish of their work, checking that the den looks inviting and is comfortable inside. Take photographs of the construction as a record of their work.	• Large scale den construction kits • Fabrics • Large scale junk modelling materials, including cardboard and plastic • Clips, clothes pegs and other joining devices • Cameras or tablets
Express P. of Study Design and technology Evaluate 3 Evaluate their ideas and products against design criteria. Knowledge Year 1 A strength is a good quality of a piece of work. A weakness is an area that could be improved. Skill Year 1 Talk about their own and each other's work, identifying strengths or weaknesses and offering support.	Look carefully at the finished dens and ask the children to talk about the task and describe anything that worked well, any difficulties they had or any changes they made. Explore why it is important to make improvements and come up with new ideas to help them understand that they have taken part in an iterative design process where products are prototyped, tested, analysed and refined. Invite the children to use their dens under supervision during break or lunchtime. After playing, lead a group discussion about their play dens, using the Play den design presentation to guide the conversation. At the end of the discussion, provide photographs of the finished dens and ask the children to fill in the Play den evaluation sheet to record their findings.	

Cycle A Year 1 / 2 Design and Technology Scheme of Work
Spring 2 – Taxi!

Overview:
This project teaches children about wheels, axles and chassis and how they work together to make a vehicle move.

Vocabulary:
Evaluation:
Change, Improve, Strength, Weakness
Generation of ideas:
Criteria, Design, Diagram, Idea.
Compare and contrast:
Compare, Difference, Similarity.
Staying safe:
Safety, Tool.
Everyday products:
Axel, Chassis, Vehicle, Wheel.
Structures:
Model, Part, Test.
Investigation:
Attach, Evaluate, Strong, Tool, Weak.
Materials for purpose:
Material, Purpose.
Mechanisms and movement:
Axel, Chassis, Connect, Move, Roll, Wheel.
Significant people:
Product, Taxi, Transport, Vehicle.

Assessment outcomes:
Give children design criteria for building their dens and ask them to evaluate their ideas and products against design criteria. Allow them to talk about their own and each other's work, identifying strengths or weaknesses and offering support,

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage **Lesson 1: Investigating wheels, axles and chassis** P. of Study Design and technology Evaluate 5 Explore and evaluate a range of existing products. Knowledge Year 1 Everyday products are objects that are used routinely at home and school, such as a toothbrush, cup or pencil. All products are designed for a specific purpose. Specific knowledge Year 1 A wheel is a circular object that is connected to an axle that makes vehicles and machines move. An axle is a rod that is connected to the centre of a wheel, which allows it to turn. A chassis is the frame of a vehicle. Skill Year 1 Name and explore a range of everyday products and describe how they are used.	Provide groups of three or four children with a box of objects and encourage them to push and pull the box along the floor. Ask, 'Is it easy or difficult to move the box? Is it easier to push or pull the box? What happens if you add more objects to the box and try to move it?' Give each group a skateboard or rollers to put under the box, then ask the children to move the box again to observe if it is easier or harder to move on wheels. Explain that wheels have been used for thousands of years to make things move smoothly and easily. Give the children toys and household items with wheels to investigate, such as toy vehicles, ride-on toys, skateboards, wheeled suitcases and pushchairs. As they explore, ask the children if they can spot the wheels, axles and chassis on each item. Then, give the children a copy of the Investigating wheels, axles and chassis recording sheet to complete.	• Box of objects • Skateboard or rollers • Selection of toys and household items with wheels, such as toy vehicles, ride-on-toys, wheeled suitcases or pushchairs

Develop **Lesson 1: Experimenting** P. of Study Design and technology Technical 2 Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products. Knowledge Year 1 An axle is a rod or spindle that passes through the centre of a wheel to connect two wheels. Specific knowledge Year 1 Most vehicles that move on land have axles and wheels that are fixed to a chassis. Skill Year 1 Use wheels and axles to make a simple moving model.	Recap on the terms wheel, axle and chassis from the previous session, then provide construction kits for the children to create a moving vehicle. Display the Moving objects picture cards and the toys from the previous session to provide inspiration, then allow the children time to make their vehicles. Take photographs of their creations and stick them onto the Vehicle evaluation sheet. Ask the children to complete the sheet using the correct terminology. At the end of the session, encourage the children to share their designs with others.	• Construction kits • Camera
Lesson 2: Exploring axles P. of Study Design and technology Evaluate 5 Explore and evaluate a range of existing products. Knowledge Year 1 Two products can be compared by looking at a set of criteria and scoring both products against each one. Specific knowledge Year 1 Axles and wheels can be attached to chassis in different ways: an axle fixed to a chassis has freely moving wheels, whereas a freely moving axle has fixed wheels. Skill Year 1 Describe the similarities and differences between two products.	Before the lesson, make a variety of moving vehicle prototypes by following the Moving vehicles instructions. At the beginning of the lesson, explain to the children that there are different ways of making axles and fixing wheels to a chassis. Show the children the prepared examples and describe how each has been made. Ask the children to look at the different methods of attaching axles and wheels and then encourage them to choose one that they would like to make. Give each child a copy of the Moving vehicles instructions and the equipment needed. With adult support, encourage the children to follow the instructions to attach the axles and wheels to their chassis using their chosen method. When complete, encourage the children to test their vehicles to see how they move. At the end of the session, ask the children to fill in the Moving vehicle evaluation sheet to record their learning.	• Small cardboard boxes • Wooden clothes pegs • Wheels • Thin dowel rods • Small elastic bands • Glue • Masking tape • Cardboard tabs • Single hole punch • Metal or plastic washers
Innovate **Lesson 1: Designing our taxis** P. of Study Design and technology 4 Year 1 Design Design purposeful, functional, appealing products for themselves and other users based on design criteria. 4 Year 1 Design Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. Knowledge Year 1 Design criteria are the explicit goals that a project must achieve. Skill(s) Year 1 Create a design to meet simple design criteria.	Encourage the children to look carefully at the London taxi picture cards and ask questions, such as 'What is a taxi? How many wheels and axles do they have? Why is there a sign on the front? Where do the passengers sit?' When the children have explored the form and function of a London taxi, explain that their task is to design a model London taxi which can move and has either fixed or moving axles. Ask the children to talk about their ideas, encouraging them to think about how they could change or improve the London taxi design. As a class, choose and record at least three essential design criteria that all their taxis must have, such as two axles and four wheels, headlights, a roof, and seats for at least two passengers. Show the children the materials available, such as cardboard boxes, card, dowel rods, rubber bands, wheels, washers, clothes pegs and other craft materials. After the children have explored the materials, ask them to complete the London taxi design recording sheet to begin planning their designs.	• Cardboard boxes • Card • Dowel rods • Rubber bands • Wheels • Washers • Clothes pegs • Craft materials
Lesson 2: Making our taxis P. of Study Design and technology Technical 2 Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products. Knowledge Year 1 An axle is a rod or spindle that passes through the centre of a wheel to connect two wheels. Skill Year 1 Use wheels and axles to make a simple moving model.	Provide the materials and tools for the children to make and decorate their London taxis. Demonstrate how to use the tools safely, then ask the children to use their design sheets as a guide as they create. Provide plenty of adult supervision and encourage adults to ask questions about the use of axles and wheels, and help the children solve any problems they encounter. Encourage the children to test their models as they work, to make sure they move smoothly and freely. At the end of the session, ask the children to take a photograph of their finished London taxi.	• Cardboard boxes • Card • Dowel rods • Rubber bands • Wheels • Washers • Clothes pegs • Craft materials • Tools, such as junior hacksaws and bench hooks
Express **Evaluating our taxis** P. of Study Design and technology Evaluate 3 Evaluate their ideas and products against design criteria. Knowledge Year 1 A strength is a good quality of a piece of work. A weakness is an area that could be improved. Skill Year 1 Talk about their own and each other's work, identifying strengths or w	Put the children into small groups with adult support. Give each child a few minutes to show their completed London taxi, demonstrating how they have met the essential design criteria and explaining what went well and any problems they encountered. After the discussion, give each child a printed photograph of their completed London taxi and a London taxi evaluation sheet. Ask them to stick the photograph onto the sheet and then work through the evaluation, answering the questions and describing what went well and what improvements they could make to their taxi.	• Glue

Cycle A Year 1 / 2 Design and Technology Scheme of Work
Summer 2 - Chop, Slice and Mash

Overview:
This project teaches children about sources of food and the preparatory skills of peeling, tearing, slicing, chopping, mashing and grating. They use this knowledge and techniques to design and make a supermarket sandwich according to specific design criteria.

Vocabulary:
Evaluation:
Evaluate, Evaluation, Improve, Success.
Generation of ideas:
Design, Design criteria, Diagram, Label.
Staying safe:
Hygiene, Rule, Safety.
Investigation:
Chop, Grate, Grater, Knife, Mash, Masher, Peel, Peeler, Slice, Tear.
Nutrition:
Flavour, Fruit, Healthy, Ingredients, Salad, Vegetable.
Origins of food:
Animal, Dairy product, Fish, Flower, Fruit, Lead, Meat, Nut, Plant, Root, Seed, Source, Stem.

Assessment outcomes:
Provide each child with a photograph of their sandwich and a Supermarket sandwich evaluation sheet. Ask the children to complete the questions to evaluate their sandwich and give it a star rating.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage **Lesson 1: Investigating sources of food** P. o Study Design and technology Food 1 Understand where food comes from. Knowledge Year 1 Some foods come from animals, such as meat, fish and dairy products. Other foods come from plants, such as fruit, vegetables, grains, beans and nuts. Skill Year 1 Sort foods into groups by whether they are from an animal or plant source.	Assess the children's prior knowledge by discussing the types of food that they eat and where they think they come from. Explain that some foods come from plants and some from animals, and give the children the opportunity to name foods from the different sources. Watch the Sources of food video and discuss what they've seen. Give pairs of children a selection of real foods to sort into two groups: plant source or animal source. Discuss their choices, correct any misconceptions and ask children to record their groupings using the Food sources table.	• Real foods from plant sources, such as carrot, potato, lettuce, spinach, celery, rhubarb, pomegranate seeds, raisins, apple and banana • Real foods from animal sources, such as ham, cheese, tuna, eggs, milk and honey
Develop **Lesson 1: Preparing fruits and vegetables** P. of Study Design and technology 2 Year 1 Make Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing). P. of Study Breadth Science 1 Year 1 Aims Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. P. of Study RHE - Health education 1 Year 1 Health Know about personal hygiene and germs including bacteria, viruses, how they are spread and treated, and the importance of handwashing. Knowledge Year 1 Specific tools are used for particular purposes. For example, scissors are used for cutting and glue is used for sticking. Year 1 Hand washing and good hygiene are important parts of a healthy lifestyle and prevent the spread of germs. Year 1 Knives are used for slicing and chopping, a grater is used for grating, a vegetable peeler is used for peeling and a masher is used for crushing. Skill(s) Year 1 Select the appropriate tool for a simple practical task. View progression.	Present the children with a variety of real fruits and vegetables and discuss how some foods need to be prepared before eating, such as by peeling, slicing, chopping and grating. Demonstrate preparation techniques using different tools, emphasising the importance of safe handling of knives and other sharp objects and the use of a non-slip chopping board. Divide the children into small groups and provide them with the Food preparation picture cards. Encourage them to follow the cards and select the appropriate tool to peel, slice, tear, chop, mash or grate, under supervision. Invite the children to taste the fruits and vegetables that they have prepared. Encourage them to record the appearance, taste and texture of the prepared foods on the Foods recording sheet using vocabulary provided on the Foods word mat. **Note:** Discuss hygiene rules associated with food preparation, including wearing an apron, washing hands, washing fruit and vegetables to remove soil or chemicals and maintaining a clean workspace. **Check for allergies and gain parental permission before tasting foods.**	• Variety of fruits and vegetables • Chopping boards • Antibacterial spray and cloths • Aprons • Child-safe knives, peelers, mashers and graters

Year 1 Explain why hand washing and cleanliness are important.		
Innovate **Lesson 1: Designing a supermarket sandwich** P. of Study Design and technology 4 Year 1 Design Design purposeful, functional, appealing products for themselves and other users based on design criteria. 4 Year 1 Design Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. 5 Year 1 Evaluate Explore and evaluate a range of existing products. Knowledge Year 1 Design criteria are the explicit goals that a project must achieve. Year 1 The importance of a product may be that it fulfils its goals and performs a useful purpose. Skill(s) Year 1 Create a design to meet simple design criteria. View progression Year 1 Describe why a product is important.	Tell the children that they will be designing and making a new sandwich, which could be sold in a supermarket. Provide a range of supermarket sandwiches, rolls and wraps for the children to investigate by looking and tasting. Encourage the children to think about who might buy supermarket sandwiches and what they might look for in a sandwich. Elicit responses about healthy ingredients, taste, texture or ease of eating. Introduce the children to the five design criteria for their sandwich; it must be healthy, have at least three ingredients, have an appealing appearance, taste good and be easy to eat by hand. Provide children with the Supermarket sandwich planning sheet to complete and encourage them to think about the design criteria as they plan.	• Range of supermarket bought sandwiches, including rolls and wraps • Knife and plates
Lesson 2: Making a supermarket sandwich P. of Study Breadth Design and technology Aims 2 Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. Knowledge Year 1 Rules are made to keep people safe from danger. Safety rules include always listening carefully and following instructions, using equipment only as and when directed, wearing protective clothing if appropriate and washing hands before touching food. Skill Year 1 Follow the rules to keep safe during a practical task.	Provide the children with the ingredients listed on their Supermarket sandwich planning sheet. Remind them of the importance of good hygiene rules, including washing their hands, keeping a clean workspace, and the safe handling of sharp tools. Encourage the children to use the techniques learned throughout the project to follow their plans and make their supermarket sandwich, with supervision. Photograph the completed sandwiches and allow the children to taste their own and a partner's sandwiches. Encourage the children to provide feedback on the ingredients, appearance, taste and ease of eating. **Note:** Discuss hygiene rules associated with food preparation, including wearing an apron, washing hands, washing fruit and vegetables and maintaining a clean workspace. **Check for allergies and gain parental permission before tasting foods.**	• Sliced white bread, sliced brown bread, rolls and wraps • Margarine or butter • Foods listed on children's planning sheets • Sauces and dressings • Chopping boards • Antibacterial spray and cloths • Aprons • Knives, potato peelers, potato mashers, graters and tin openers • Camera
Express **Evaluate** P. of Study Design and technology Evaluate 3 Evaluate their ideas and products against design criteria. Knowledge Year 1 A strength is a good quality of a piece of work. A weakness is an area that could be improved. Skill Year 1 Talk about their own and each other's work, identifying strengths or weaknesses and offering support.	Recap on the design criteria and invite the children to discuss the success of their sandwiches. Ask questions, such as 'Did you fulfil the design criteria? What worked well? What would you improve? Did you enjoy eating the sandwich?' Look at the photographs of the sandwiches and invite the children to comment on each other's work. Ask the children 'If you were buying a supermarket sandwich, which one would you choose and why?' Provide each child with a photograph of their sandwich and a Supermarket sandwich evaluation sheet. Ask the children to complete the questions to evaluate their sandwich and give it a star rating.	

Cycle B Year 1 / 2 Design and Technology Scheme of Work
Autumn 2 - Remarkable Recipes

Overview: This project teaches children about sources of food and tools used for food preparation. They also discover why some foods are cooked and learn to read a simple recipe. The children choose and make a new school meal that fulfils specific design criteria.

Vocabulary:
Evaluation:
Change, dislike, evaluation, evaluate, improve, like, success.
Generation of ideas:
Design, design criteria, drawing, equipment, ingredient, instruction, label, method, picture, recipe, test.
Investigation:
Fork, grate, grater, grip, knife, mash, masher, measure, measuring spoon, mix, peel. Peeler, property, purpose, slice, spoon, spread, tongs, tool.
Nutrition:
Ingredients, measure, preparation.
Origins of food:
Animal, diet, fish, flower, fruit, leaf, mixed, nut, plant, pulse, root, seed, shellfish, source, stem, vegan, vegetarian.

Assessment outcomes:
Provide each child with a photograph of the finished meal and a New school meal evaluation sheet. Ask the children to evaluate the meal and give it a star rating.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage – Exploring where food comes from P. of Study Design and technology Food 1 Understand where food comes from. Knowledge Year 2 Food comes from two main sources: animals and plants. Cows provide beef, sheep provide lamb and mutton and pigs provide pork, ham and bacon. Examples of poultry include chickens, geese and turkeys. Examples of fish include cod, salmon and shellfish. Milk comes mainly from cows but also from goats and sheep. Most eggs come from chickens. Honey is made by bees. Fruit and vegetables come from plants. Oils are made from parts of plants. Sugar is made from plants called sugar cane and sugar beet. Plants also give us nuts, such as almonds, walnuts and hazelnuts. Skill Year 2 Identify the origin of some common foods (milk, eggs, some meats, common fruit and vegetables).	Recap on the sources of food, namely plant and animal sources, and ask the children for examples of foods from each source. Show the Where does our food come from? presentation and discuss the information. Give each child A3 copies of the Food sources recording sheet and a set of the Food types cut outs. Invite them to cut out and match the food with where it comes from. Encourage the children to share their groupings and address any misconceptions before they stick down or record their answers.	
Develop **Lesson 1: Tools** P. of Study Design and technology 6 Year 2 Make Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing). 2 Year 2 Food Use the basic principles of a healthy and varied diet to prepare dishes. Knowledge Year 2 Different tools have characteristics that make them suitable for specific purposes. For example, scissors are used for cutting paper because they have sharp, metal blades that can cut through thin materials. Year 2 Some ingredients need to be prepared before they can be cooked or eaten. There are many ways to prepare ingredients: peeling skins using a vegetable peeler, such as potato skins; grating hard ingredients, such as cheese or chocolate; chopping vegetables, such as onions and peppers and slicing foods, such as bread and apples. Skill(s) Year 2 Select the appropriate tool for a task and explain their choice. View progression Year 2 Prepare ingredients by peeling, grating, chopping and slicing.	Provide the children with a range of tools used for preparing and cooking food. Allow the children to investigate the features of each tool and think about what each one might be used for and its properties that make it suitable for this purpose. Give each child a Which tool? recording sheet. Encourage the children to attempt the task, under supervision, using the tools provided and select which tool works best. Encourage them to complete the recording sheet, explaining the reasons for their choices and ask them to share their answers at the end of the session.	• Range of cooking utensils including masher, fork, spoon, tongs, grater, sharp knife, peeler, wooden spoon, table knife and measuring spoons • Bananas, lettuce, cheese, potatoes, cucumbers, flour, margarine and sliced loaf • Bowls and plates • Aprons

Lesson 2: Why do we cook our food? P. of Study Breadth Science Aims 2 Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them. Knowledge Year 2 Some foods, such as ice and chocolate, melt when heated, but then harden (solidify or freeze) when cooled. Skill Year 2 Observe what happens when a range of everyday materials, including foods, are heated and cooled, sorting and grouping them based on their observations.	Show the children the Why do we cook our food? presentation and discuss the reasons for cooking foods. Explain that they will explore how pulses and root vegetables are softened by cooking. Allow the children to look at and feel a variety of dried pulses and root vegetables, including lentils, chickpeas, kidney beans, butter beans, carrots, parsnips and turnips, and discuss why they need cooking. Provide each child with a root vegetable to prepare by peeling and chopping. Remind the children of hygiene rules around food preparation and supervise the use of sharp knives. Put a selection of presoaked dried pulses and the children's prepared vegetables into pans of water and simmer for 20 minutes or until soft. Allow the children to cut and taste the cooked vegetables and pulses and discuss how they have changed after cooking. Give each child a Why we cook our food activity sheet to consolidate their understanding. **Note:** Before cooking, discuss hygiene rules associated with food preparation, including wearing an apron, washing hands, washing fruit and vegetables and maintaining a clean workspace. **Check for allergies and gain parental permission before tasting foods.**	• Variety of dried pulses, such as lentils, chickpeas, kidney beans and butter beans • Variety of root vegetables including carrots, parsnips and turnips • Peelers, sharp knives and forks • Chopping boards • Pans • Plates • Aprons
Lesson 3: Reading recipes P. of Study Design and technology 4 Year 2 Design Design purposeful, functional, appealing products for themselves and other users based on design criteria. 4 Year 2 Design Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. 1 Year 2 Aims Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. P. of Study RHE - Health education 2 Year 2 Health Know about personal hygiene and germs including bacteria, viruses, how they are spread and treated, and the importance of handwashing. Knowledge Year 2 Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology. Year 2 Hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriately and wiping up spills. Skill(s)nYear 2 Generate and communicate their ideas through a range of different methods. Year 2 Work safely and hygienically in construction and cooking activities.	Ask the children what a recipe is and discuss their ideas. Show them the How to read a recipe presentation to introduce the format of a recipe. Explain to the children that they will follow a recipe to make a dessert called Eton Mess. Give each child a copy of the Eton Mess recipe and read through it together, discussing the pieces of information and asking questions, such as 'How many people will this recipe serve? How long will it take to make? Do we need a chopping board? What do we need to do first?' Put the children into groups with an adult to follow the recipe and create the dessert. After making, discuss how the children found following the recipe and ask questions, such as 'Did you follow the steps in order? Did the recipe work? How important was each part of the recipe? Why were the measurements useful?' Give each group the Eton Mess recipe evaluation sheet to complete. **Note:** Before cooking, discuss hygiene rules associated with food preparation, including wearing an apron, washing hands, washing fruit and vegetables and maintaining a clean workspace. **Check for allergies and gain parental permission before tasting foods.**	• Ingredients for Eton Mess • Chopping boards • Sharp knives, forks and spoons • Mixing bowls • Plastic freezer bags • Small serving bowls • Aprons
Innovate **Lesson 1: Planning a school meal** P. of Study Design and technology 4 Year 2 Design Design purposeful, functional, appealing products for themselves and other users based on design criteria. 4 Year 2 Design Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. Year 2 Evaluate Explore and evaluate a range of existing products. Knowledge Year 2 Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology. Year 2 Many key individuals have helped to shape the world. These include engineers, scientists, designers, inventors and many other people in important roles. Year 2 School kitchen staff are important people because they provide healthy, nutritious, appealing and balanced meals. Skill(s) Year 2 Generate and communicate their ideas through a range of different methods. Year 2 Explain why a designer or inventor is important.	Introduce the important role of the school kitchen staff in preparing and cooking healthy and tasty meals. Explain to the children that the school's kitchen staff want to make a new lunchtime meal that must be healthy, taste good, involve cooking and include pulses and root vegetables. They have chosen two recipes that they would like the children to test. Put the children into groups with an adult and ask them to read the New school meal recipes. Ask the children to look at each recipe and answer the questions to see how well each recipe fits the design criteria. As a class, decide on the best recipe and give each child a New school meal recording sheet to complete to record their thinking.	

Lesson 2: Making a new school meal P. of Study Design and technology 2 Year 2 Food Use the basic principles of a healthy and varied diet to prepare dishes. P. of Study RHE - Health education 2 Year 2 Healthy Know what constitutes a healthy diet (including understanding calories and other nutritional content). 1 Year 2 Healthy Know the principles of planning and preparing a range of healthy meals. Knowledge Year 2 A healthy diet should include meat or fish, starchy foods (such as potatoes or rice), some dairy foods, a small amount of fat and plenty of fruit and vegetables. Skill(s) Year 2 Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal.	Make the chosen recipe as a teacher demonstration to the children. Involve the children in preparing the ingredients and measuring quantities, and encourage them to read the recipe and follow the steps as you work. Invite the children to taste the finished meal and comment on the taste, texture and appearance. Use a camera to take a photograph of the meal. **Note:** Before cooking, discuss hygiene rules associated with food preparation, including wearing an apron, washing hands, washing fruit and vegetables and maintaining a clean workspace. **Check for allergies and gain parental permission before tasting foods.**	• Ingredients for the chosen recipe • Aprons • Chopping boards • Sharp knives • Frying pans • Camera
Express P. of Study Design and technology Evaluate 4 Evaluate their ideas and products against design criteria. Knowledge Year 2 Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned. Skill Year 2 Explain how closely their finished products meet their design criteria and say what they could do better in the future.	Recap on the five design criteria and invite the children to discuss the success of the new meal. Ask questions, such as 'Did the meal fulfil the design criteria? What did you enjoy? What would you improve? Would you eat the new meal if it was served at lunchtime?' Provide each child with a photograph of the finished meal and a New school meal evaluation sheet. Ask the children to evaluate the meal and give it a star rating.	

Cycle B Year 1 / 2 Design and Technology Scheme of Work
Spring 2 – Beach Hut

Overview: This project teaches children about making and strengthening structures, including different ways of joining materials.

Vocabulary:
Evaluation:
Change, improve, strength, success, weakness.
Generation of ideas:
Describe, diagram, label.
Staying safe:
Equipment, safety, tool.
Structures:
Construct, frame, join, joint, stable, stiff, strengthen, structure.
Investigation:
Cut, finish, model, support, tool.
Materials for purpose:
Material, property, use.

Assessment outcomes:
Ask the children to complete the questions to evaluate their model and to give it a star rating. Create a display of the finished models.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage – Investogating beach huts P. of Study Design and technology 4 Year 2 Design Design purposeful, functional, appealing products for themselves and other users based on design criteria. 4 Year 2 Design Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. Knowledge Year 2 Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology. Skill(s) Year 2 Generate and communicate their ideas through a range of different methods.	Look at the Beach hut picture cards and ask, 'Where were the photographs taken? What are the beach huts used for? What are the beach huts made from? Why are the beach huts colourful?' Ask them to describe a beach hut's features using words on the Beach hut diagram. Encourage the children to label pictures of beach huts on the Beach hut recording sheet and to record their learning using the correct vocabulary. At the end of the session, create a beach hut in the role play area for the children to explore. As they play, ask the children to think about how people use beach huts and what objects and equipment would make a beach hut a comfortable and usable space.	• Role play beach equipment
Develop **Lesson 1: Experimenting** P. of Study Design and technology Technical 3 Build structures, exploring how they can be made stronger, stiffer and more stable. Knowledge Year 2 Structures can be made stronger, stiffer and more stable by using cardboard rather than paper and triangular shapes rather than squares. A broader base will also make a structure more stable. Skill Year 2 Explore how a structure can be made stronger, stiffer and more stable.	Provide a range of craft or recycled materials, fabrics and joining materials, such as glue and sticky tape, for the children to make beach huts and shelters for small world figures. Demonstrate strengthening, scoring and joining techniques as the children work by following the Strengthening, scoring and joining teacher information. Allow time for the children to experiment, using the Beach hut picture cards for inspiration. Encourage them to take a picture of their finished huts and shelters and evaluate their designs on the Small world beach hut evaluation sheet at the end of the session.	• Craft or recycled materials • Fabrics and joining materials, such as glue and sticky tape • Small world figures • Metal ruler • Craft knife • Lollipop sticks or straws • Clothes pegs or bulldog clips • Camera

Lesson 2: Working with wood P. of Study Design and technology Technical 3 Build structures, exploring how they can be made stronger, stiffer and more stable. Knowledge Year 2 Structures can be made stronger, stiffer and more stable by using cardboard rather than paper and triangular shapes rather than squares. A broader base will also make a structure more stable. Skill Year 2 Explore how a structure can be made stronger, stiffer and more stable.	Explain that beach huts are normally made from wood. Lead a discussion about building with wood and ask the children to describe how wood can be joined to make a structure. Record the children's ideas then demonstrate how to measure, saw, sand and join pieces of wood together, and use triangular corners to make a strong wooden frame, referring to the Woodwork teacher information for guidance. Give children the opportunity to create their own wooden frames, with support. Leave the frames to dry, then encourage the children to evaluate the strength and shape of their frame and talk about the role the triangular corners have played in creating strong joints. At the end of the session, show the children how wooden frames can be joined together to create 3-D box frames and structures, using the Box frame diagram.	• Junior hacksaw • Bench hook • G clamp • PVA or wood glue • Triangular corners • 10mm square wooden dowel or stripwood • Sandpaper • Tape measure
Innovate **Lesson 1: Designing our huts** P. of Study Design and technology Make 6 Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Knowledge Year 2 Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint. Skill Year 2 Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.	Explain that the children will be making a model beach hut, using the basic 3-D wooden box frame. Discuss and list the features of beach huts and ask the children to decide what design criteria their beach hut should meet. Choose some essential design criteria from the list and display them for the children. Give each child a copy of the Beach hut design recording sheet. Ask the children to write the essential design criteria in the space provided and to complete their design plans. At the end of the session, ask the children to share their designs with a partner, encouraging them to listen carefully to each other and ask questions about the design, such as 'How big will your beach hut be? How will you make your design strong? How will you decorate your beach hut? How will you make the roof?'	• Construction materials, including wood, triangular corners, cardboard and glue • Fabric • Art materials
Lesson 2: Making our huts P. of Study Design and technology Make 6 Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing). Knowledge Year 2 Different tools have characteristics that make them suitable for specific purposes. For example, scissors are used for cutting paper because they have sharp, metal blades that can cut through thin materials. Specific knowledge Year 2 Tools for working with wood include a junior hacksaw, for cutting; a bench hook, for supporting the wood and as a guide to cut; and a G clamp, for holding the bench hook and wood securely. Skill Year 2 Select the appropriate tool for a task and explain their choice.	Ask the children to read their design plans carefully and gather all the equipment they need to make the model beach hut. With adult support, ask the children to create the basic 3-D box frame for their beach hut by carefully measuring and sawing the dowel or pine stripwood to the correct lengths and using glue and triangular corners to create strong joints. When dry, the children should make the walls and roof for their beach hut, using the materials provided. Remind the children of the strengthening, scoring and joining skills they learned when they created small world beach hut models and emphasise the importance of an attractive finish. Encourage the children to experiment and change their ideas or the materials they are using at this stage. Give them time to complete their models, using offcuts and craft materials to add enhancements, such as life rings or flags.	• Junior hacksaw • Bench hook • G clamp • PVA or wood glue • Triangular corners • 10mm square wooden dowel or stripwood • Sandpaper • Tape measure • Fabric • Art materials • Decorations
Express **Evaluating our beach huts:** P. of Study Design and technology Evaluate 4 Evaluate their ideas and products against design criteria. Knowledge Year 2 Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned. Skill Year 2 Explain how closely their finished products meet their design criteria and say what they could do better in the future.	Divide the children into groups and ask them to share their models with other children. Encourage them to discuss their design ideas, any successes or problems they encountered and how they fulfilled the essential design criteria. After the discussion, provide each child with a Beach hut evaluation sheet and a printed photograph of their finished model. Ask the children to complete the questions to evaluate their model and to give it a star rating. Create a display of the finished models.	

Cycle B Year 1 / 2 Design and Technology Scheme of Work
Summer 2 - Cut, Stitch and Join

Overview: This project teaches children about fabric home products and the significant British brand Cath Kidston. They learn about sewing patterns and using a running stitch and embellishments before making a sewn bag tag.

Vocabulary:
Generation of ideas:
Bag tag, design, diagram, explore, talk
Investigation:
Cut, equipment, glue, join, sewing pattern, stapler, tool.
Materials for purpose:
Decorative, embellishment, fabric, material, textile.
Compare and contrast:
Compare, design, different, landmarks, motif, same, spots, stripes.
Everyday products:
Attractive, cushion, hardwearing, improve, peg bag, pillowcase, product, slippers, tablecloth, tea cosy, tea towel, toiletry bag.
Significant people:
Cath Kidston, brand, distinctive, fashion, homeware designer, inspire, textile, vintage.
Cutting and joining textiles:
Cut, fabric, fasten, glue, join, needle, running stitch, sew, stitch, textile, thread, tie.
Decorating and embellishing textiles:
Applique, button, decorative, embellishment, fabric, printing, sequin, textile.

Assessment outcomes:
Use the Bag tag evaluation sheet to guide discussions with the children and encourage them to record their thoughts.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage **Lesson 1: Everyday fabric products** P. of Study Design and technology Evaluate 5 Explore and evaluate a range of existing products. Knowledge Year 2 Products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive. Specific knowledge Year 2 There are many fabric home products. These include bedding, tea towels, cushions, tea cosies, toiletry bags and other containers. Skill Year 2 Explain how an everyday product could be improved.	Gather a range of home products made from fabric. These could include tea towels, pillowcases, cushions, tea cosies, tablecloths, toiletry bags, slippers and peg bags. Let the children handle and explore the items, asking them to say what the product is, what it does, what fabric it is made from, and describe any fastenings that it may have. Encourage the children to look at each product's seams, stitching, fabric and finishing and begin making suggestions about how each product could be improved. Ask questions to help guide the children's thinking. For example, 'From what fabric is this item made? How many parts does it have? How is it joined? How is it fastened? Who might use this product and why? Do you think this product will work well? How could you improve this product?' Direct the children to investigate and compare some of the products more closely, using the Home products recording sheet as a guide. At the end of the session, choose a couple of products to reflect on together.	• Tea towels, pillowcases, cushions, tea cosies, tablecloths, toiletry bags, slippers and peg bags • Hand lenses
Lesson 2: Significant designer – Cath Kidston P. of Study Design and technology Evaluate 5 Explore and evaluate a range of existing products. Knowledge Year 2 Products can be compared by looking at particular characteristics of each and deciding which is better suited to the purpose. Knowledge Year 2 Many key individuals have helped to shape the world. These include engineers, scientists, designers, inventors and many other people in important roles. Specific knowledge Year 2 A brand is a name, term, design, or symbol identifying a seller's products or services. Famous brands include Coca Cola, Kellogg's and Apple.	Recap on the names and functions of the home products that the children investigated in the previous lesson. Explain that they will be learning about the British brand, Cath Kidston and ask them if they recognise the brand or have any Cath Kidston products at home. Show the children the Cath Kidston presentation. After sharing, explain the meaning of any vocabulary, and ask the children to discuss the information presented. Encourage them to articulate the design features that make Cath Kidston products distinctive. Invite the children to study the design features of Cath Kidston products further by choosing one of the Cath Kidston products picture cards and completing the questions and tasks on the Cath Kidston products recording sheet. At the end of the session, invite them to say what they have learned about Cath Kidston products and summarise why her designs are important.	

Skill Year 2 Compare different or the same products from the same or different brands. Skill Year 2 Explain why a designer or inventor is important.		
Develop **Lesson 1: Sewing patterns** P. of Study Design and technology Make 6 Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing). Knowledge Year 2 Different tools have characteristics that make them suitable for specific purposes. For example, scissors are used for cutting paper because they have sharp, metal blades that can cut through thin materials. Specific knowledge Year 2 A sewing pattern is a template of the parts needed to make a garment or product. Pattern pieces are usually made from paper. Skill Year 2 Select the appropriate tool for a task and explain their choice.	Ask the children if they are familiar with the term 'sewing pattern'. After discussing the children's ideas, give out the Bag tag sewing pattern cut outs. Demonstrate how the pattern can be cut out and joined using glue or staples to make a paper model of a bag tag. Invite the children to practise cutting out the pattern with care and accuracy. Show them how to use the appropriate tools to cut and join the bag tag pattern, encouraging them to follow the Paper model bag tag instructions. Offer support as the children work on their tags. At the end of the session, ask the children to articulate the benefits of using a sewing pattern to make a product.	• Scissors • Glue • Staplers • Ribbon or string
Lesson 2: Stitching P. of Study Design and technology Make 6 Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing). Knowledge Year 2 A running stitch is a basic stitch that is used to join fabric. It is made by passing a needle in and out of fabric at an even distance. Skill Year 2 Use different methods of joining fabrics, including glue and running stitch.	Ask the children to reflect on their work from the previous lesson. Show the Bag tags presentation and ask the children to describe each bag tag's materials and joining methods. Explain that they will learn how to join fabric by learning a simple stitch called a running stitch. Show the Running stitch video to demonstrate this simple stitch. Organise the children into groups with adult support and give each a basket of the practical resources. Invite them to practise a simple running stitch along a single piece of binca or aida fabric. To extend the task, challenge them to use a running stitch to join two pieces of binca or aida. At the end of the session, encourage the children to say what they have learned and recap any tricky points.	• Binca or aida fabric • Sewing thread • Large eye needles • Scissors
Lesson 3: Embellishment P. of Study Design and technology Make 6 Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Knowledge Year 2 Embellishment is a decorative detail or feature added to something to make it more attractive. Skill Year 2 Add simple decorative embellishments, such as buttons, prints, sequins and appliqué.	Ask the children if they are familiar with the term 'embellishment', then explain that it is a decorative detail or feature added to something to make it attractive. Provide examples of clothes and homeware products that have been embellished with sequins, buttons, appliqué and printed fabric. Ask the children to explain how the embellishments make the items more attractive and well finished. Show examples of embellishment by showing the Adding embellishment video. Discuss each embellishment method shown and model any techniques you feel children need to see in more detail. Organise the children into smaller working groups with adult support. The adult support should demonstrate examples of embellishment techniques for children to practise, using the Appliqué pattern pieces cut outs and the information from the video as a guide. Challenge the children to use the techniques to embellish squares of fabric. At the end of the guided session, invite each group to feedback to others. Encourage them to share their work and explain what they learned about embellishing fabric, which types of embellishment they found the most enjoyable and the most challenging.	• Cotton squares • Fabric glue • Glue spreaders • Sequins, ribbons and buttons with large holes • Pattern pieces • Pens or pencils • Felt • Sewing needles and threads • Printing blocks (bought or found objects) • Fabric paints • Paint Brushes and palettes • Plastic table covering
Innovate **Lesson 1: Designing a bag tag** P. of Study Design and technology 4 Year 2 Design Design purposeful, functional, appealing products for themselves and other users based on design criteria. 4 Year 2 Design Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.	Before the lesson, create a display of fabrics and embellishments you would like the children to use for their bag tags. Felt, binca and aida are suitable fabrics as they have weight and stiffness. Remind the children of the purpose of a bag tag. Explain that they will be designing and making a sewn bag tag for their school bag or lunchbox. Ask the children to generate a range of ideas about the design of their product using the Bag tag sewing pattern cut outs as a starting point. Encourage them to consider what their tag will be made from and how it will be joined and embellished. As the children develop their ideas, encourage them to discuss their designs, explore the fabrics and embellishments available and draw labelled diagrams. At the end of the session, ask the children to choose one of their ideas to make.	• Fabrics, such as felt, binca and aida • Embellishments, such as sequins, buttons and printing blocks and paint • Sewing needles and threads

Knowledge Year 2 Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology. Skill(s) Year 2 Generate and communicate their ideas through a range of different methods.		• Fabric clips and glue • Glue spreaders • Scissors • Ribbon or cord • Pen or pencils
Lesson 2: Making a bag tag P. of Study Design and technology Make 6 Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Knowledge Year 2 Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint. Skill Year 2 Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.	Begin by showing children the Making your bag tag video. After watching the video, allow the children time to ask and answer questions about the task. Provide the practical resources and adult support for children during the making process. Encourage them to help and support each other with their work. Ask the children to use the Bag tag checklist to ensure they have finished their bag tag to a high standard.	• Fabrics, such as felt, binca and aida • Embellishments, such as sequins, buttons and printing blocks and paint • Sewing needles and threads • Fabric clips and glue • Glue spreaders • Scissors • Ribbon or cord • Pen or pencils
Express **Evaluate:** P. of Study Design and technology Evaluate 4 Evaluate their ideas and products against design criteria. Knowledge Year 2 Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned. Skill Year 2 Explain how closely their finished products meet their design criteria and say what they could do better in the future.	Invite the children to work in small groups to evaluate their two products: their paper model bag tags and their sewn bag tags. Use the Bag tag evaluation sheet to guide discussions with the children and encourage them to record their thoughts. Display the children's work alongside their plans and design criteria.	

Cycle A Year 3 / 4 Design and Technology Scheme of Work
Autumn 2 - Cook Well, Eatwell

Overview: This project teaches children about food groups and the Eatwell guide. They learn about methods of cooking and explore these by cooking potatoes and ratatouille. The children choose and make a taco filling according to specific design criteria.

Vocabulary:
Evaluation:
Evaluate, Evaluation, Improve, Success.
Generation of ideas:
Design, Design criteria, Diagram, Health and safety, Plan.
Food preparation and cooking:
Bake, Barbeque, Boil, Chop, Cook, Deseed, Dice, Fry, Grate, Grill, Hob, Ingredient, Method, Microwave, Mix, Oven, Peel, Prepare, Roast, Skin, Slice, Slow cooker, Steam.
Nutrition:
Eatwell guide, Balanced, Calcium, Carbohydrate, Dairy, Diet, Fibre, Food group, Fruit, Healthy, Nutrient, Nutrition, Oil, Protein, Vegetable, Vitamin.
Significant people:
Food Standard Agency.

Assessment outcomes:
Recap on their design criteria and invite the children to comment on the success of their filling. Display the photographs of the fillings and invite children to comment on each other's work. Provide each child with a photograph of their filling and a Taco filling evaluation sheet to evaluate their work.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage **Lesson 1: Healthy balanced diets** P. of Study Design and technology 1 Year 3 Food Understand and apply the principles of a healthy and varied diet. 2 Year 3 Evaluate Understand how key events and individuals in design and technology have helped shape the world. P. of Study RHE - Health education 2 Year 3 Healthy Know what constitutes a healthy diet (including understanding calories and other nutritional content). P. of Study Science 2 Year 3 Animals Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Knowledge Year 3 There are five main food groups that should be eaten regularly as part of a balanced diet: fruit and vegetables; carbohydrates (potatoes, bread, rice and pasta); proteins (beans, pulses, fish, eggs and meat); dairy and alternatives (milk, cheese and yoghurt) and fats (oils and spreads). Foods high in fat, salt and sugar should only be eaten occasionally as part of a healthy, balanced diet. Year 3 Key inventions in design and technology have changed the way people live. Year 3 Humans have to get nutrition from what they eat. It is important to have a balanced diet made up of the main food groups, including proteins, carbohydrates, fruit and vegetables, dairy products and alternatives, and fats and spreads. Humans need to stay hydrated by drinking water. Skill(s) Year 3 Identify the main food groups (carbohydrates, protein, dairy, fruits and vegetables, fats and sugars). View progression Year 3 Describe how key events in design and technology have shaped the world. View progression. Year 3 Explain the importance and characteristics of a healthy, balanced diet.	Discuss with the children the phrase 'healthy, balanced diet'. Explain that we can divide foods into groups according to the nutrients that they provide. Share the Healthy, balanced diet presentation with the children to introduce the food groups and the Eatwell guide. Give pairs of children the Food groups sorting cards to sort into the five food groups: proteins; carbohydrates; fruit and vegetables; dairy and alternatives and oils and spreads. Discuss their groupings and correct any misconceptions.	

Develop **Lesson 1: Using cooking appliances** P. of Study Breadth Design and technology 1 Year 3 Aims Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. 3 Year 3 Food Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Knowledge Year 3 Electrical appliances must only be used under the supervision of an adult. Safety rules must also be followed when using electricity: fingers and other objects must not be put into electrical outlets, anything with a cord or plug should never be used around water and a plug should never be pulled out by its cord. Year 3 Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning. Skill(s) Year 3 Use appliances safely with adult supervision. Year 3 Prepare and cook a simple savoury dish.	Explain to the children that some foods require cooking before being eaten, either to make them safe, such as chicken, or soft and palatable, such as lentils. Share the Methods of cooking presentation to introduce different ways of cooking and cooking appliances. Tell the children that they will be investigating how to cook potatoes using different approaches. Give pairs of children one of the Cooking potatoes instructions and ask them to familiarise themselves with the steps. Provide the children with aprons and the necessary resources, then supervise them in cooking the potatoes. Once cooked, encourage the children to examine and taste the cooked potatoes. Ask questions, such as 'To which food group do potatoes belong? Which potatoes tasted best? Which are the healthiest and why?' **Note:** Before cooking, discuss hygiene rules associated with food preparation, including wearing an apron, washing hands, washing fruit and vegetables and maintaining a clean workspace. **Check for allergies and gain parental permission before tasting foods.**	• Potatoes • Sunflower oil • Potato peelers, sharp knives, slotted spoons, fish slices, forks and tongs • Chopping boards • Aprons • Saucepans with lids, colanders, saucepan with steamer basket and lid, frying pan and roasting tin • Non-metallic plate • Kitchen roll • Hob and oven • Microwave
Lesson 2: Making a ratatouille P. of Study Design and technology Food 3 Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Knowledge Year 3 Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning. Specific knowledge Year 3 Slow cookers cook food on a low heat over several hours. Skill Year 3 Prepare and cook a simple savoury dish.	Recap on the cooking methods used in the previous lesson and ask children to recall the information about slow cookers from the Methods of cooking presentation. Explain to the children that they will now use a slow cooker to make a vegetarian dish called ratatouille. Give groups of children the equipment, ingredients and Ratatouille recipe, and supervise the children in preparing and frying the vegetables before adding to the slow cooker and leaving to cook. At the end of the day, allow each child to taste the ratatouille and share their thoughts on its taste, texture, appearance, cooking method, ease of cooking and the healthiness of the dish. **Note:** This lesson involves the use of a slow cooker and a long cooking time and should be done first thing in the morning. Before cooking, discuss hygiene rules associated with food preparation, including wearing an apron, washing hands, washing fruit and vegetables and maintaining a clean workspace. **Check for allergies and gain parental permission before tasting foods.**	• Ratatouille ingredients • Chopping boards • Sharp knives, slotted spatulas, garlic press and forks • Aprons • Frying pan • Slow cookers • Plates
Innovate **Lesson 1: Planning a taco filling** P. of Study Design and technology 3 Year 3 Design 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. 3 Year 3 Design Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. 1 Year 3 Food Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Knowledge Year 3 Design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user. Year 3 The types of food that will grow in a particular area depend on a range of factors, such as the rainfall, climate and soil type. For example, many crops, such as potatoes and sugar beet, are grown in the south-east of England. Wheat, barley and vegetables grow well in the east of England. Year 3 Tacos are a traditional Mexican street food made from wheat or corn tortillas, filled with a meat or vegetarian filling and topped with salsa, lettuce or cheese. Skill(s) Year 3 Develop design criteria to inform a design. Year 3 Identify and name foods that are produced in different places.	Tell the children that you have been contacted by the owners of the Eatwell Café. They have added tacos to their daily menu, and would like the children to suggest a range of healthy, hot taco fillings. Show the children a taco shell and explain that tacos are a traditional Mexican street food made from wheat or corn tortillas, filled with a meat or vegetarian filling and topped with salsa, lettuce or cheese. Recap on the food groups and the Eatwell guide. Discuss which food group the taco shell fits into and ask the children which food groups they might include in their filling. Support the children to decide on four design criteria for their taco filling, such as healthy and balanced; cooked; appealing appearance and being able to fit inside a taco shell. Provide the children with the Taco fillings recipes and ask them to choose a recipe that fits their design criteria. Encourage them to consider the methods of cooking that they will use, the skills that they need and hygiene and health and safety rules, recording their thinking on the Taco filling planning sheet.	• Taco shells

Lesson 2: Make a taco filling P. of Study Design and technology Food 3 Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Knowledge Year 3 Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning. Skill Year 3 Prepare and cook a simple savoury dish.	Provide the children with the ingredients for their chosen recipes, their completed Taco filling planning sheets and supervised access to sharp utensils and appliances. Remind the children about working hygienically and encourage them to follow the recipe to prepare their taco fillings. Display the finished fillings in a serving area and take photographs. Encourage the children to assemble the tacos using the shells, fillings and toppings before tasting. Ask the children to think about the flavours, how the fillings contributes to a healthy, balanced diet and their appearance. **Note:** Before cooking, discuss hygiene rules associated with food preparation, including wearing an apron, washing hands, washing fruit and vegetables and maintaining a clean workspace. **Check for allergies and gain parental permission before tasting foods.**	• Ingredients for taco fillings • Chopping boards • Sharp knives • Ovenproof casserole dish, frying pan and baking sheet • Garlic press, tin opener, slotted spatula • Measuring jug, mixing bowl • Hob and oven • Salsa, shredded lettuce and grated cheese • Camera
Express **Evaluation** P. of Study Design and technology Evaluate 4 Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Knowledge Year 3 Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. Skill Year 3 Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.	Recap on their design criteria and invite the children to comment on the success of their filling. Display the photographs of the fillings and invite children to comment on each other's work. Provide each child with a photograph of their filling and a Taco filling evaluation sheet to evaluate their work.	

Cycle A Year 3 / 4 Design and Technology Scheme of Work
Spring 2 - Making It Move

Overview:
This project teaches children about cam mechanisms. They experiment with different shaped cams before designing, making and evaluating a child's automaton toy.

Vocabulary:
Evaluation:
Demonstrate, Discussion, Evaluate, Explain, Feedback, Finish, Improve, Improvement, Quality, Reflect, Strength, Structure.
Generation of ideas:
Design, Design criteria, diagram.
Investigation:
Component, Cut, Join, Material, Test.
Mechanisms and movement:
Automation toy, Axle, Cam, Component, Down, Elliptical cam, Follower, Heart cam, Hexagonal cam, Lever, Linkage, Machine, Mechanical, Mechanism, Motion, Movement, Off-centre circular cam, Pear cam, rotational, Slider, Snail cam, Square cam, Up, Wheel.

Assessment outcomes:
Give children design criteria for building their automated toys and ask them to evaluate their ideas and products against design criteria. Allow them to talk about their own and each other's work, identifying strengths or weaknesses and offering support.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage **Lesson 1: Machines and mechanisms** P. of Study Design and technology 2 Year 3 Evaluate Investigate and analyse a range of existing products. 3 Year 3 Technical Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). Knowledge Year 3 Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box. Year 3 Levers consist of a rigid bar that rotates around a fixed point, called a fulcrum. They reduce the amount of work needed to lift a heavy object. Sliders move from side to side or up and down, and are often used to make moving parts in books. Axles are shafts on which wheels can rotate to make a moving vehicle. Cams are devices that can convert circular motion into up-and-down motion. Skill(s) Year 3 Explain how an existing product benefits the user. Year 3 Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products.	Recap the terms 'machine' and 'mechanism' from previous learning and revisit the names of different mechanisms, including sliders, levers, linkages, axles and wheels. Ask the children to give examples of machines, encouraging them to describe what work they do, the movement they create and their benefits. Provide groups of four children with the Mechanism models cut outs printed on card, the Mechanism models instructions and the practical resources. Ask the group to construct the mechanisms and explain and record how they work and create movement on the Mechanism models recording sheet. At the end of the session, ask the children to share their explanations, then introduce them to cams by showing the Cam mechanism demonstration video. Ask the children to describe this new mechanism, its parts, and the movement it creates. Explain that they will learn more about cam mechanisms throughout the project.	• Scissors • Craft knife and cutting board • PVA glue • Sticky tack • Split pins • Corrugated card • Ruler • Paper drinking straws • Masking and sticky tape • Wooden skewers • Sharp pencils • Paper clips
Develop **Lesson 1: How cams work** P. of Study Design and technology 5 Year 3 Make Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. 3 Year 3 Technical Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). Knowledge Year 3 Specific tools can be used for cutting, such as saws. Wood can be joined using glue, nails, staples, or a combination of these. Safety rules must be followed to prevent injury from sharp blades. These rules include using a bench hook to keep the wood still, using a junior hacksaw with a pistol grip and working under adult supervision.	Ask the children to recall the name of the new mechanism they were introduced to in the previous lesson and how it worked. Show the Cam mechanisms video and stress that a cam mechanism can change a rotational movement into an up and down movement. Ask the children to work in pairs to make a cam mechanism. Show the How to make a cam mechanism video and provide the children with the Cam mechanism cut outs and practical resources. Encourage the children to follow the instructions on the video to make a cam mechanism. They could also use the Cam mechanism instructions to guide their work if necessary. After making, invite the children to draw a labelled diagram of their cam mechanism and write a short description to explain how it works on the Cam mechanism recording sheet. Share the children's descriptions at the end of the session.	• Small cardboard boxes, such as cube-shaped tissue boxes • Wooden dowel • Wooden skewers • Pipe cleaners • Paper drinking straws • Corrugated card • Sticky tack and tape • Scissors • Sharp pencils • Rulers

Year 3 Levers consist of a rigid bar that rotates around a fixed point, called a fulcrum. They reduce the amount of work needed to lift a heavy object. Sliders move from side to side or up and down, and are often used to make moving parts in books. Axles are shafts on which wheels can rotate to make a moving vehicle. Cams are devices that can convert circular motion into up-and-down motion. Year 3 Cam mechanisms consist of an axle, a cam and a follower. The cam is fixed to the axle and the follower sits on the cam. When the axle is rotated, the follower moves up and down, following the shape of the cam. Cams are used in many machines. In engines, cams open and close valves. They can also be used to make carousel horses move up and down. Skill(s) Year 3 Use tools safely for cutting and joining materials and components. Year 3 Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products.		
Lesson 2: Using different shaped cams P. of Study Design and technology Technical 3 Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). Knowledge Year 3 Levers consist of a rigid bar that rotates around a fixed point, called a fulcrum. They reduce the amount of work needed to lift a heavy object. Sliders move from side to side or up and down, and are often used to make moving parts in books. Axles are shafts on which wheels can rotate to make a moving vehicle. Cams are devices that can convert circular motion into up-and-down motion. Specific knowledge Year 3 Different shaped cams produce different patterns of movement in the follower. A pear cam makes the follower stationary for half a turn, then it gently rises and falls. It is used for carousel horses. An off-centre circular cam produces a smooth, continuous up and down movement. It is used for steam engine pistons. A heart cam makes a jerky, irregular up and down movement. A snail cam makes the follower stationary for half a turn, then gently rise and quickly fall. Skill Year 3 Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products.	Recap the cam mechanism and ask the children to explain how it works. Show the Different shaped cams video and ask the children to describe how the follower moves and how that relates to the shape of the cam. Provide pairs of children with the Different shaped cams cut outs, following the instructions and replacing the pear cam in the cam mechanism model they made in the previous session. Encourage the children to predict and then test the movement of the follower with each shaped cam. Provide each child with a copy of the Different shaped cams recording sheet to record their findings and encourage them to discuss what they found at the end of the lesson.	• Corrugated card • Scissors • Sticky tack • Sharp pencils
Innovate **Lesson 1: Designing an automaton toy** P. of Study Design and technology 3 Year 3 Design 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. 3 Year 3 Design Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. 3 Year 3 Make 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. Knowledge Year 3 Design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user. Year 3 Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost. Year 3 Automata are machines that seem to move on their own and are intended to intrigue and delight an audience. Skill(s) Year 3 Develop design criteria to inform a design. Year 3 Plan which materials will be needed for a task and explain why.	Explain to the children that they will be using their knowledge of cam mechanisms to make a child's automaton toy. Watch and discuss the KiwiCo video What is an Automaton and How do They Work? on YouTube to introduce the concept of an automaton, which uses cams to create the required movement. After the discussion, show the NHS 2018 Automata Movie and Automata on YouTube. Share the design criteria with the children from the Automaton toy planning sheet and encourage them to add some of their own. Make a display of the materials available for the children to use, then encourage them to explore their ideas, making notes and drawing sketches to record their thinking. Encourage the children to talk about their ideas and ask and answer questions. After a period of exploration, ask the children to choose one design to make and encourage them to complete the Automaton toy planning sheet.	• Junk modelling materials, including small cardboard boxes • Wooden dowels • Wooden skewers • Pipe cleaners • Paper drinking straws • Corrugated card • Joining materials, including PVA glue, sticky tack and sticky tape • Scissors • Finishing materials, including paint, felt tip pens, coloured paper, printed images, stickers and feathers

Lesson 2: Making an automaton toy P. of Study Design and technology 4 Year 3 Evaluate Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. 5 Year 3 Make Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. P. of Study Breadth Science 1 Year 3 Aims Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. Knowledge Year 3 Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. Year 3 Specific tools can be used for cutting, such as saws. Wood can be joined using glue, nails, staples, or a combination of these. Safety rules must be followed to prevent injury from sharp blades. These rules include using a bench hook to keep the wood still, using a junior hacksaw with a pistol grip and working under adult supervision. Skill(s) Year 3 Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account. Year 3 Use tools safely for cutting and joining materials and components. Year 3 Make working models with simple mechanisms or electrical circuits.	Ask the children to gather the resources they need to build their automaton toy. Encourage the children to follow their completed Automaton toy planning sheet and encourage them to test their toy, ask for help and advice and make any adjustments as they develop their machines. At the end of the session, ask them to reflect on their toys and provide verbal feedback about the task. Take photographs of the finished automaton toys.	• Junk modelling materials, including small cardboard boxes • Wooden dowels • Wooden skewers • Pipe cleaners • Paper drinking straws • Corrugated card • Joining materials, including PVA glue, sticky tack and sticky tape • Scissors • Finishing materials, including paint, felt tip pens, coloured paper, printed images, stickers and feathers • Camera or tablet
Express **Evaluation** P. of Study Design and technology Evaluate 4 Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Knowledge Year 3 Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. Skill Year 3 Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.	Ask the children to share their automaton toys with others, demonstrating and explaining how the cam mechanism works. Encourage the children to evaluate the success of each other's designs, how closely they fit the design criteria and identify areas for improvement. At the end of the session, ask each child to complete the Automaton toy evaluation sheet to reflect on their work.	

Cycle A Year 3 / 4 Design and Technology Scheme of Work
Summer 2 - Greenhouse

Overview:
This project teaches children about the purpose, structure and design features of greenhouses, and compares the work of two significant greenhouse designers. They learn techniques to strengthen structures and use tools safely. They use their learning to design and construct a mini greenhouse.

Vocabulary:
Evaluation:
Change, Design criteria, Effective, Evaluation, Findings, Improvement, Observation, Suitability,
Generation of ideas:
Design, Design criteria, Diagram, Dimension, Plan,
Investigation:
G clamp, Bench hook, Butt joint, Explore, Gluing, Hacksaw, Hot glue gun, Improve, Investigate, Joining, Reinforcing, Strengthening, Test, Triangular corner.
Compare and contrast:
Biome, Compare, Conservatory, Designer, Difference, Purpose, Similarity, Style, Structure.
Staying safe:
Safety Rules, Supervision.
Everyday products:
Cloche, Cold frame, Greenhouse.
Structures:
Diagonal strut, Frame structure, Stability, Strength, Three-dimensional, Triangular shape.
Materials and purpose:
Glass, Hardwearing, Material, Plastic, Property, Purpose, Strength, Transparent, Waterproof.

Assessment outcomes:
Ask the children to discuss and evaluate their structures in groups. Provide each child with a Mini greenhouse evaluation sheet and a photograph of their mini greenhouse. Ask the children to complete the questions to evaluate their greenhouse and give it a star rating. Over the next five weeks, encourage the children to observe their mini greenhouses and observe any changes in the plants and structure. Ask the children to record their observations on the Changes over time recording sheet and share their findings with others.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage **Lesson 1: Greenhouse design** P. of Study Design and technology Evaluate 2 Investigate and analyse a range of existing products. Knowledge Year 3 Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box. Specific knowledge Year 3 A greenhouse is a building where plants can grow in a warm and protected environment. Greenhouses let light in through transparent or translucent walls and roofs. Windows, vents or fans provide ventilation. Skill Year 3 Explain how an existing product benefits the user.	Share the Greenhouses presentation. Discuss the key features and benefits of greenhouses and why they are used. Ask the children what materials are used to make greenhouses and what makes these materials suitable for the purpose. If possible, explore a range of greenhouses on the school grounds or in a local allotment. Alternatively, provide the Greenhouses picture cards for the children to explore. Ask the children to draw diagrams of two or three different greenhouses, labelling the materials and any interesting design features. At the end of the session, ask the children to explain their findings.	
Lesson 1: Significant designers P. of Study Design and technology Evaluate 2 Understand how key events and individuals in design and technology have helped shape the world. Knowledge Year 3 Work from different designers can be compared by assessing specific criteria, such as their visual impact, fitness for purpose and target market. Specific knowledge Year 3 There are similarities and differences between the Great Conservatory of Chatsworth House and the Eden Project biomes. Both greenhouses were built	Explain that the design and structure of greenhouses have changed over time as new ideas, materials and building methods have been developed. Show the children the video clip The Eden Project and encourage them to make notes about the design and purpose of the Eden Project biomes. After watching, provide the Great greenhouses information sheet and read it together. Ask questions to help the children find similarities and differences between the Great	

to house tropical plants and have a frame structure. However, the frameworks are made of different materials and the greenhouses are heated in different ways. Skill Year 3 Explain the similarities and difference between the work of two designers.	Conservatory of Chatsworth House and the biomes of the Eden Project. Encourage the children to use the information they have learned to complete the Great greenhouses table and share their comparisons at the end of the session. **Note:** Start The Eden Project video at 0:14 seconds to avoid the use of inappropriate language.	
Develop **Lesson 1: Strengthening structures** P. of Study Design and technology Technical 1 Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Knowledge Year 3 Shell structures are hollow, 3-D structures with a thin outer covering, such as a box. Frame structures are made from thin, rigid components, such as a tent frame. The rigid frame gives the structure shape and support. Diagonal struts can strengthen the structure. Specific knowledge Year 3 Diagonal struts create triangular shapes within a frame structure. Adding diagonal struts adds strength and stability. Skill Year 3 Create shell or frame structures using diagonal struts to strengthen them.	Explain that a frame structure is a 3-D structure made with thin, rigid components, which usually have an outer covering. Give examples of frame structures, such as a tent or an umbrella, and ask the children if they can think of any others. Explain that a successful frame structure is well supported, stable and strengthened. Demonstrate how to use cocktail sticks carefully inserted into jelly sweets to build a frame structure, stressing that the sharp points need careful handling. Encourage the children to follow the Strengthening frame structures instructions to build frame structures and investigate the use of diagonal struts for strength. After building, ask the children to complete the Strengthening frame structures recording sheet and discuss their findings.	• Wooden cocktail sticks • Small jelly sweets, such as mini gems • Heavy books
Lesson 2: Using a hot glue gun P. of Study Design and technology Make 5 Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. Knowledge Year 3 Specific tools can be used for cutting, such as saws. Wood can be joined using glue, nails, staples, or a combination of these. Safety rules must be followed to prevent injury from sharp blades. These rules include using a bench hook to keep the wood still, using a junior hacksaw with a pistol grip and working under adult supervision. Specific knowledge Year 3 A hot glue gun can join materials, including wood, some plastics, metal, fabric and paper. The advantages of a hot glue gun are that it allows glue to go onto a surface smoothly, the user can direct the glue to exactly where it is needed, and the glue hardens quickly. Safety rules must be followed to prevent burns. Skill Year 3 Use tools safely for cutting and joining materials and components.	Recap the children's knowledge of woodwork using the Woodwork teacher information as a guide. Show the children a hot glue gun and explain the advantages of using hot glue over PVA glue used previously. Explain that the children will use wood and hot glue to join basic butt joints and attach triangular corners. Ask the children to work in groups with adult supervision. Encourage them to follow the Making a strong butt joint instructions and provide the Triangular corners template for them to use. At the end of the session, discuss the benefits of using hot glue in woodwork and decide which triangular corners were most effective at strengthening the joint. Link the triangular shape of the corners to the strengthening effects of diagonal struts from the previous lesson. **Note:** Use the Hot glue gun teacher information to demonstrate the safe use of a hot glue gun and the importance of adult supervision.	• Pencils • Rulers • 80cm lengths of 1cm x 1cm pine stripwood • Junior hacksaws, bench hooks and G clamps • Masking tape • Sandpaper • Hot glue guns and glue sticks • Range of materials, including corrugated card, thin card, tissue paper, cartridge paper, thick plastic and thin plastic • Scissors
Lesson 3: Investigating sheet materials P. of Study Design and technology Make 3 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. Knowledge Year 3 Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost. Specific knowledge Year 3 Materials, such as glass and plastic are suitable for making greenhouse roofs and walls because they are transparent, waterproof and hardwearing. Skill Year 3 Plan which materials will be needed for a task and explain why.	Discuss the materials used to make greenhouse roofs and walls. Ask the children to describe some of the properties of these materials using words and phrases, such as transparent, strong, lightweight, waterproof, flexible and easy to cut. Explain that the children will now investigate the most suitable material for a greenhouse covering. Provide the practical resources and the Sheet materials investigation. Encourage the children to predict which materials they think would be most effective before investigating and collecting their data. At the end of the session, ask them to use their results to select the material they think would work best and justify their choice. **Note:** During the lesson, explain that glass is commonly used in greenhouses because it is transparent, waterproof and hardwearing. However, it is easy to break and very sharp when broken, so it is unsuitable for this classroom investigation.	• Range of sheet materials, including corrugated card, tissue paper, woven fabric, cling film, tin foil, bubble wrap and acetate sheets • Small jam jars • Elastic bands • 3ml pipettes • Timers • Kitchen towel

Innovate **Lesson 1: Planning a mini greenhouse** P. of Study Design and technology 3 Year 3 Design 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. 3 Year 3 Design Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Knowledge Year 3 Design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user. Skill(s) Year 3 Develop design criteria to inform a design.	Explain to the children that they will be working in small groups to design and make a mini greenhouse or cloche to provide shelter and protection for a plant. Put the children into groups of four and give them the first design criteria: it must have a wooden frame. As a group, ask the children to develop three more design criteria that they will need to achieve with their design. Provide each child with a Mini greenhouse planning sheet and ask them to fill in the group design criteria before creating an individual greenhouse design. As the children work, remind them of their previous learning to help them choose which materials and building techniques to use. At the end of the session, encourage the children to discuss their ideas and select one of the group's designs to make, or use a range of different ideas and a new planning sheet to create a shared design. **Note:** Provide a wide range of materials for the children to explore as they design, including sheet materials, stripwood, junk modelling materials and joining materials. Show children the young plants that will be housed in their mini greenhouses so they can consider dimensions when planning and making.	• Sheet materials, including cling film, bubble wrap and polythene sheeting • Stripwood • Junk modelling materials, including corrugated cardboard and plastic containers • Joining materials, including duct tape and hot glue sticks • Equipment, including junior hacksaws, bench hooks, G clamps, sandpaper, scissors and hot glue guns • Young plants
Lesson 2: Making a greenhouse P. of Study Design and technology Make 5 Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. Knowledge Year 3 Specific tools can be used for cutting, such as saws. Wood can be joined using glue, nails, staples, or a combination of these. Safety rules must be followed to prevent injury from sharp blades. These rules include using a bench hook to keep the wood still, using a junior hacksaw with a pistol grip and working under adult supervision. Skill Year 3 Use tools safely for cutting and joining materials and components.	Ask the children to read their completed planning sheets carefully and work in their groups to gather the materials and equipment needed to construct their mini greenhouse. Provide adult supervision stations for using hot glue guns, duct tape and junior hacksaws. Support the children to make their structures by creating a solid wooden frame and then covering it with their chosen sheet material. Encourage them to use an iterative design process, changing and improving their designs as they work. When the structures are complete, ask the children to take them outside to cover a single young plant. Encourage them to take a photograph of their mini greenhouse in situ.	• Young plants • Sheet materials, including cling film, bubble wrap and polythene sheeting • Stripwood • Junk modelling materials, including corrugated cardboard and plastic containers • Joining materials, including duct tape and hot glue sticks • Equipment, including junior hacksaws, bench hooks, G clamps, sandpaper, scissors and hot glue guns • Pencils and rulers • Masking tape • Sandpaper • Scissors • Cameras or tablets
Express **Mini greenhouse evaluation** P. of Study Design and technology Evaluate 4 Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Knowledge Year 3 Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. Skill Year 3 Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.	Ask the children to discuss and evaluate their structures in groups. Provide each child with a Mini greenhouse evaluation sheet and a photograph of their mini greenhouse. Ask the children to complete the questions to evaluate their greenhouse and give it a star rating. Over the next five weeks, encourage the children to observe their mini greenhouses and observe any changes in the plants and structure. Ask the children to record their observations on the Changes over time recording sheet and share their findings with others.	• Printed photographs of the completed mini greenhouses • Clipboards

Cycle B Year 3 / 4 Design and Technology Scheme of Work
Autumn 2 - Fresh Food, Good Food

Overview:
This project teaches children about food decay and preservation. They discover key inventions in food preservation and packaging, then make examples. The children prepare, package and evaluate a healthy snack.

Vocabulary:
Evaluation:
Evaluation, fulfil design criteria, improve, success
Generation of ideas:
Build, deconstruct, net, reconstruct, sketch
Everyday products:
Tetra Pak, Tupperware, bag, bottle, box, can, carton, cling film, compostable, food packaging, jar, recyclable, recycle, reuse
Materials for purpose:
Polystyrene, card, cardboard, cling film, glass, paper, plastic, tin, tin foil
Significant people:
Dr Ruben Rausing, Earl Tupper, Gerald Thomas, Henry D Thatcher, Jacob Perkins, Kruger Brewing Company, Louis Pasteur, Nicolas Appert, Peter Durand, Ralph Wiley, TV dinners, Tetra Pak, Tupperware, William Cullen, William Kellogg, best before, canning, drying, freezing, pasteurisation, pickling, refrigeration, salting,
saran wrap, use by
Structures:
Cone, cube, cuboid, hexagonal prism, net, packaging, prototype, triangular prism
Food preparation and cooking:
Bake, blender, chop, chopping board, cool, crush, cut, garlic press, grate, heat, knife, mash, masher, mix, pastry brush, peel, slice, spread, tear, wash, Nutrition, fresh, healthy, snack

Assessment outcomes:
Provide each child with a photograph of their packaged snack. Invite the children to comment on the success of their product and each other's work. Give each child a Packaged healthy snack evaluation sheet to record their learning.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage - Keeping food fresh P. of Study Design and technology Evaluate 3 Understand how key events and individuals in design and technology have helped shape the world. Knowledge Year 4 Significant designers and inventors can shape the world. Specific knowledge Year 4 Food deteriorates due to the growth of microorganisms. Decay can be prevented or delayed by preservation methods, such as drying, salting, pickling, canning, pasteurising, refrigerating or freezing the food. Skill Year 4 Explain how and why a significant designer or inventor shaped the world.	Display the Decaying foods picture cards one at a time on a whiteboard, and discuss what is happening to the food and why. Show the Keeping food fresh presentation. Ask questions about the presentation to check the children's understanding and address any misconceptions, such as 'What causes food to decay? How do microorganisms get onto food? Who invented pasteurisation? Why does pasteurisation keep food fresh for longer? Why was the 'use by' date invented?' Ask the children to complete the Keeping food fresh question sheet to consolidate their understanding and use the Keeping food fresh answer sheet to mark their work.	
Develop **Lesson 1: Food packaging** P. of Study Design and technology • 9 Year 4 Evaluate Investigate and analyse a range of existing products. • 1 Year 4 Food Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. • 3 Year 4 Evaluate Understand how key events and individuals in design and technology have helped shape the world.	Recap the learning from the previous lesson, then show the children the Food packaging presentation. Discuss the presentation and address any misconceptions. Encourage the children to investigate different sorts of food packaging, to identify the ways in which they help to preserve and protect food. Give each child a copy of the Food packaging recording sheet to complete, then discuss their findings. At the end of the session, talk about the issues surrounding packaging and recycling. Encourage the children to think about the balance between the need to keep food fresh	• Variety of food packaging, including boxes, cans, plastic bottles, shrink wrap, Tetra Pak and sandwich wrappers

Knowledge • Year 4 Design features are the aspects of a product's design that the designer would like to emphasise, such as the use of a particular material or feature that makes the product easier to use or more durable. • Year 4 Particular areas of the world have conditions suited to growing certain crops, such as coffee in Peru and citrus fruits in California in the United States of America. • Year 4 Significant designers and inventors can shape the world. **Skill(s)** • Year 4 Investigate and identify the design features of a familiar product. • Year 4 Identify and name foods that are produced in different places in the UK and beyond. • Year 4 Explain how and why a significant designer or inventor shaped the world.	and the importance of cutting down on the use of single-use plastics and non-recyclable materials.	
Lesson 2: Diagrams and prototypes **P. of Study Design and technology** • 4 Year 4 **Design** 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. • 4 Year 4 **Design** Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. • 1 Year 4 **Technical** Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. **Knowledge** • Year 4 Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way. • Year 4 A prototype is a mock-up of a design that will look like the finished product but may not be full size or made of the same materials. Shell and frame structures can be strengthened by gluing several layers of card together, using triangular shapes rather than squares, adding diagonal support struts and using 'Jinks' corners (small, thin pieces of card cut into a right-angled triangle and glued over each joint to straighten and strengthen them). • Year 4 Most cardboard packaging is produced from a net. Packages can be strengthened by using thicker cardboard or multiple layers. **Skill(s)** • Year 4 Use annotated sketches and exploded diagrams to test and communicate their ideas. • Year 4 Prototype shell and frame structures, showing awareness of how to strengthen, stiffen and reinforce them.	Explain that some food packaging is produced using a net, which is a 2-D piece of material that is folded and secured to make a 3-D shape. Provide the children with different packaging to deconstruct and reconstruct, to see the shape of the net and where the wording and information is printed. To consolidate their knowledge of nets, provide each child with one of the Packaging nets cut outs printed onto card. Encourage them to visualise the shape of the packaging, decorate the faces with slogans pictures and information, and then build the net, scoring the folds for a neat finish and fixing the tabs securely using glue or tape. Ask children to evaluate the packaging nets by using the Packaging nets evaluation sheet.	• Cardboard packaging in a range of sizes and shapes, such as cereal boxes, teabag boxes, chocolate boxes, triangular chocolate tubes and gravy granules pots • Glue or tape
Lesson 3: Fresh, healthy snacks **P. of Study Design and technology** • 1 Year 4 **Food** Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. • 3 Year 4 **Food** Understand and apply the principles of a healthy and varied diet. **P. of Study RHE - Health education** • Year 4 **Healthy** Know what constitutes a healthy diet (including understanding calories and other nutritional content). • 3 Year 4 **Healthy** Know the principles of planning and preparing a range of healthy meals.	Recap healthy eating from previous projects and explain that freshly made, healthy snacks contain less sugar and fats than convenience snacks like crisps, biscuits and chocolate. Provide the children with the Healthy snack recipes. Encourage them to prepare and make the snacks using the techniques on the Food preparation picture cards, which the children have learned in previous year groups. Adult demonstration and supervision is needed if using an electric blender. After making, encourage the children to try each snack and fill in their Healthy snack evaluation sheet. At the end of the session, discuss the problems with taking these healthy snacks to school. Ask questions, such as 'How would you carry this snack to school? How would you keep the snack cool? How would you stop it leaking in your bag?' and record the suggestions. **Note:** Discuss hygiene rules associated with food preparation, including wearing an apron, washing hands, washing fruit and vegetables to remove	• Ingredients for healthy snacks (see recipes for more details) • Electric blenders • Measuring spoons, measuring jugs, large bowls, small glass bowls • Knives, garlic presses, wooden skewers, potato peelers, pastry brushes • Chopping boards • Baking trays, large saucepans with

Knowledge • Year 4 Cooking techniques include baking, boiling, frying, grilling and roasting. • Year 4 Healthy snacks include fresh or dried fruit and vegetables, nuts and seeds, rice cakes with low-fat cream cheese, homemade popcorn or chopped vegetables with hummus. A healthy packed lunch might include a brown or wholemeal bread sandwich containing eggs, meat, fish or cheese, a piece of fresh fruit, a low-sugar yoghurt, rice cake or popcorn and a drink, such as water or semi-skimmed milk. **Skill(s)** • Year 4 Identify and use a range of cooking techniques to prepare a simple meal or snack. • Year 4 Design a healthy snack or packed lunch and explain why it is healthy.	soil or chemicals and maintaining a clean workspace. **Check for allergies and gain parental permission before tasting foods.**	tight-fitting lids, colanders • Baking parchment
Express **Evaluation** P. of Study Design and technology Evaluate 4 Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Knowledge Year 4 Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. Evaluation also includes suggesting improvements and explaining why they should be made. Skill Year 4 Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making improvements.	Provide each child with a photograph of their packaged snack. Invite the children to comment on the success of their product and each other's work. Ask questions, such as, 'Did you fulfil the design criteria? Was your snack healthy? Did it taste good? What packaging did you use? Was most of it recyclable? Did your packaging keep the snack fresh? How could you improve your design?' Give each child a Packaged healthy snack evaluation sheet to record their learning.	

Cycle B Year 3 / 4 Design and Technology Scheme of Work
Spring 2 - Functional and Fancy Fabrics

Overview:
This project teaches children about home furnishings and the significant designer William Morris. They learn techniques for decorating fabric, including block printing, hemming and embroidery and use them to design and make a fabric sample.

Vocabulary:
Evaluation:
Appearance, attractive, design criteria, evaluation, improvement, purpose, review, success
Generation of ideas:
Annotate, design criteria, plan, sketch
Everyday Products:
home furnishing, home product
Mateials for purpose:
Comfortable, delicate, durable, fabric, flexibility, flexible, lightweight, man-made, material, natural, property, soft, strength, stretchy, strong, synthetic, textile, texture, tough, use, versatile, waterproof
Significant people:
Arts and Crafts movement, Morris & Co, William Morris, textile designer
Compare and contrast:
Appearance, colour, compare, component, different, embellishment, function, material, pattern, property, purpose, quality, similar, size
Cutting and joining textiles:
Fraying, hem, pinking shears, running stitch, sew, Decorating and embellishing textiles, block printing, diamond, pattern structure, trellis, wey

Assessment outcomes:
Display the children's designs, fabric samples and photographs in a large open space so they can walk around and view each other's work. Ask them to review their work by completing the Printed fabric evaluation sheet. Encourage them to share what they think went well and what they could do to improve their finished product.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage - Exploring fabrics **P. of Study Design and technology** • 9 Year 4 **Evaluate** Investigate and analyse a range of existing products. • 6 Year 4 **Make** 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. **Knowledge** • Year 4 A comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored. • Year 4 Different materials and components have a range of properties, making them suitable for different tasks. It is important to select the correct material or component for the specific purpose, depending on the design criteria. Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season. • Year 4 Fabrics can be natural or synthetic. Natural fabrics include cotton, silk and wool. Synthetic fabrics include Lycra, polyester and nylon. **Skill(s)** • Year 4 Create and complete a comparison table to compare two or more products. View progression • Year 4 Choose from a range of materials, showing an understanding of their different characteristics.	Ask the children to define the word 'fabric', then draw on their previous learning to recall different fabrics, their properties and uses. Show the children the Fabric presentation. Use the presentation to revisit and introduce new information about fabrics. Encourage the children to use the vocabulary on the final slide to talk about fabrics' properties. Organise the children into groups and give each group a basket of fabric. You should label each fabric and add whether the fabric is natural or man-made. Aim to provide small swatches rather than full garments where possible. Ask children to explore and investigate the fabrics using the Fabric recording sheet, to help them gather and record their observations. At the end of the session, ask the children to compare and discuss their findings.	• Baskets of natural and man-made fabrics

Develop **Lesson 1: Design features of familiar products** P. of Study Design and technology Evaluate 9 Investigate and analyse a range of existing products. Knowledge Year 4 A comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored. Knowledge Year 4 Design features are the aspects of a product's design that the designer would like to emphasise, such as the use of a particular material or feature that makes the product easier to use or more durable. Specific knowledge Year 4 Design features include purpose and function, appearance, quality, material, size, colour, pattern, embellishment, durability and usability. Skill Year 4 Create and complete a comparison table to compare two or more products. Skill Year 4 Investigate and identify the design features of a familiar product.	Show children the Design features presentation. Use the questions to discuss the design features of some home products and identify their characteristics. Organise the children into groups and place a different home product on each table. Ask each group to examine their product and identify and discuss its design features. Encourage them to record their observations on the Design features recording sheet. At the end of the session, ask the children to feedback their findings. Were there any design features that were common to all the products studied?	• Familiar fabric home products, such as lampshades, cushions, oven gloves, slippers, soft toys, curtains, blankets and rugs
Lesson 2: Significant designer – William Morris P. of Study Design and technology Evaluate 3 Understand how key events and individuals in design and technology have helped shape the world. Knowledge Year 4 Significant designers and inventors can shape the world. Specific knowledge Year 4 William Morris was a British textile designer, artist and socialist activist associated with the British Arts and Crafts Movement. He was a significant contributor to the revival of traditional British textile arts and methods of production. Skill Year 4 Explain how and why a significant designer or inventor shaped the world.	Explain to the children that they will learn about William Morris, an influential product designer of the 20th century. To introduce the designer, invite the children to work in pairs to read the William Morris information sheet. After reading, ask the children to discuss and then write answers to the questions included. At the end of the session, invite the children to discuss and answer each question collectively to summarise the significance of William Morris.	
Lesson 5: Sewing a hem P. of Study Design and technology Make 2 Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. Knowledge Year 4 A hem runs along the edge of a piece of cloth or clothing. It is made by turning under a raw edge and sewing to give a neat and quality finish. Skill Year 4 Hand sew a hem or seam using a running stitch.	Introduce the term 'hem' and explain its purpose. Provide examples of garments and home products with and without a hem and encourage children to find hems on their clothes. Encourage the children to think about the benefits of a hem, including the overall quality of the finished product. To demonstrate the method, show children the Sewing a hem video. Repeat the video several times until the children have grasped the technique. You may want to demonstrate the technique again when working with focused groups. Organise the children into smaller groups and give each a set of practical resources and a raw-edged fabric swatch. Provide adult support as the children sew a hem around their fabric swatch. At the end of the session, encourage the children to evaluate the success of their sewing and identify improvements.	• Selection of garments and home products with and without a hem • Raw-edged fabric swatches • Pinking shears • Scissors, pins, needles and sewing threads • Iron, heatproof mat or ironing board
Express **Evaluation** P. of Study Design and technology Evaluate 4 Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Knowledge Year 4 Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. Evaluation also includes suggesting improvements and explaining why they should be made. Skill Year 4 Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making improvements.	Display the children's designs, fabric samples and photographs in a large open space so they can walk around and view each other's work. Encourage them to look at the fabrics and make positive and constructive comments. Ask them to review their work by completing the Printed fabric evaluation sheet. Encourage them to share what they think went well and what they could do to improve their finished product.	

Cycle B Year 3 / 4 Design and Technology Scheme of Work
Summer 2 - Tomb Builders

Overview:
This project teaches children about simple machines, including wheels, axles, inclined planes, pulleys and levers, exploring how they helped ancient builders to lift and move heavy loads.

Vocabulary:
Evaluation:
Change, evaluate, evaluation, improve, success
Generation of ideas:
annotated sketch, labelled diagram, prototype
Everyday products:
compound machine, device, simple machine
Materials for purpose:
Characteristic, material, property, rigid, smooth, strength
Mechanisms and movement:
Axle, compound machine, effort, first class, force, fulcrum, inclined plane, lever, load, pulley, screw, second class, simple machine, third class, wedge, wheel

Assessment outcomes:
Ask the children to share their designs with others, demonstrating how their machines work and explaining how they would help the pyramid builders of ancient Egypt. At the end of the session, ask the children to fill in the Machine prototype evaluation sheet to reflect on their work.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage - Identifying simple machines - P. of Study Design and technology Technical 3 Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). Knowledge Year 4 Mechanisms can be used to add functionality to a model. For example, sliders or levers can be used in moving pictures, storybooks or simple puppets; linkages in moving vehicles or puppets; gears in motorised vehicles or spinning toys; pulleys in cable cars or transport systems and cams in 3-D moving toys or pictures. Specific knowledge Year 4 Simple machines make physical jobs easier by changing the strength or direction of a force. There are six simple machines: pulley; lever; wheel and axle; wedge; inclined plane; and screw. Simple machines can be combined to make complex, compound machines. Skill Year 4 Explore and use a range of mechanisms (levers, axles, cams, gears and pulleys) in models or products.	Share the Simple machines presentation. Talk about the information in each slide and how simple machines make jobs easier by changing the direction and magnitude of a force. Ask the children to look at the Simple machines picture cards and decide which simple machines are used in each one. Discuss the children's answers at the end of the session and identify how the simple machines are sometimes used in combination to make a compound machine. For example the wheelbarrow is a compound machine, with a lever, and a wheel and axle.	
Develop **Lesson 1: Using simple machines** P. of Study Design and technology Technical 3 Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). Knowledge Year 4 Mechanisms can be used to add functionality to a model. For example, sliders or levers can be used in moving pictures, storybooks or simple puppets; linkages in moving vehicles or puppets; gears in motorised vehicles or spinning toys; pulleys in cable cars or transport systems and cams in 3-D moving toys or pictures. Specific knowledge Year 4 Simple machines make physical jobs easier by changing the strength or direction of a force. Skill Year 4 Explore and use a range of mechanisms (levers, axles, cams, gears and pulleys) in models or products.	Read the Exploring simple machines teacher information before setting up a range of activities for the children to explore levers, pulleys, inclined planes and wheels and axles. Encourage them to try to imagine how difficult each task would be without using the machine, then under close supervision, ask them to use the simple machines to complete each task. Encourage them to draw a labelled diagram of each machine they use, explaining the effect of using the machine for the task and how the strength or the direction of the force changes when a simple machine is used.	• Large tray • Box with wheels • Seesaw • Slide or gym bench • Bucket of sand • Broom handle • Rope

Lesson 2: Making simple machines P. of Study Design and technology Make 6 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. Knowledge Year 4 Different materials and components have a range of properties, making them suitable for different tasks. It is important to select the correct material or component for the specific purpose, depending on the design criteria. Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season. Specific knowledge Year 4 Characteristics of materials, such as rigidity, strength and smoothness will affect the success of a working model. Skill Year 4 Choose from a range of materials, showing an understanding of their different characteristics.	Provide the Simple machines instructions and a range of junk modelling materials, including cotton reels, dowel rod and cardboard boxes, for the children to create simple machines. Talk about the characteristics of the materials used, including the strength, rigidity and smoothness. Support the children as they join their materials. At the end of the session, ask the children to draw annotated sketches of their simple machines and explain any difficult aspects of the task.	• Plastic bottles • Dowel rod • Plastic bottle caps • Sticky tack • Small cardboard boxes • Clothes pegs • Wheels • Rubber bands • Glue • Cardboard • Sticky tape • Lollipop sticks • Plastic spoons • Wire coat hangers • Wire cutters • Cottons reels • Pliers • Broom handle • String
Express - Evaluation P. of Study Design and technology Evaluate 4 Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Knowledge Year 4 Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. Evaluation also includes suggesting improvements and explaining why they should be made. Skill Year 4 Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making improvements.	Ask the children to share their designs with others, demonstrating how their machines work and explaining how they would help the pyramid builders of ancient Egypt. Encourage the children to evaluate the success of each other's designs, describing which aspects worked well and identifying areas for improvement. At the end of the session, ask the children to fill in the Machine prototype evaluation sheet to reflect on their work.	

Cycle A Year 5 / 6 Design and Technology Scheme of Work
Autumn 2 - Moving Mechanisms

Overview: This project teaches children about pneumatic systems. They experiment with pneumatics before designing, making and evaluating a pneumatic machine that performs a useful function.

Vocabulary:
Evaluation:
Adjust design, Analysis, Deployment, Evaluate, Evaluation, Feedback, Focus group, Improvement, Iterative process, Problem-solve, Product, Prototype, Success, Test.
Everyday products:
Heavy lifting equipment, Jack, Jack hammer, Machinery, Paint sprayer, Pneumatic machine, Pneumatic system.
Structures:
Brace, Lifting arm, Load, Stable, Strong, Structure, Strut, Sturdy, Triangle.
Compare and contrast:
Difference, Similarity.
Investigation:
Equipment, Investigate, Problem-solved, Technique, Test, Version.
Mechanisms and movement:
Actuator, Air, Air pressure, Compress, Compressor, Force, Gas, Hinge, Lever, Movement, Piston, Plunger, Pneumatic system, Pneumatics, Power, Reservoir, Syringe, Valve.

Assessment outcomes:
Ask the children to present their prototype to two small focus groups, one made up of children from school and one made up of adults. Encourage them to use the Pneumatic product prototype evaluation sheet questions to lead a discussion about their prototype with each group. Encourage the focus groups to use the prototype, ask questions, comment on the design, explain what they like and suggest any improvements. Use a device to record an audio of the focus group discussions to refer to later, if needed. After receiving feedback, encourage each design team to discuss the similarities and differences in the feedback from the focus groups and identify any key points raised. Encourage the children to fill in the evaluation sheet at the end of the session to record their findings.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage **Lesson 1: Exploring pneumatics** P. of Study Design and technology 3 Year 5 Evaluate Investigate and analyse a range of existing products. 3 Year 5 Technical Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). Knowledge Year 5 Culture is the language, inventions, ideas and art of a group of people. A society is all the people in a community or group. Culture affects the design of some products. For example, knives and forks are used in the western world, whereas chopsticks are used mainly in China and Japan. The design of products needs to take into account the culture of the target audience. For example, colours might mean very different things in different cultures. Year 5 Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. These effects can be achieved using syringes and plastic tubing. Year 5 A pneumatic system uses air to exert a force. This force is used in pneumatic jacks to lift vehicles, in paint sprayers to force paint out at high speed, in jackhammers to break up pavements and in train and bus brakes. Skill(s) Year 5 Explain how the design of a product has been influenced by the culture or society in which it was designed or made. Year 5 Use mechanical systems in their products, such as pneumatics.	Share the States of matter presentation to recap on the characteristics of gases. Show the children the Pneumatics video. Ask the children questions about the information and ensure they can describe the forces in action and why pneumatics are used in heavy lifting equipment and machinery. Provide each child with a Pneumatic systems recording sheet and the listed practical resources. Invite the groups to carry out the experiments listed on the recording sheet and encourage them to share their findings at the end of the session. **Note:** A Glossary of technical vocabulary is provided for the children to refer to during the project.	• Books • Large squeezy bottles • Lengths of plastic tubing (that fits snuggly over the syringe ends) • Plastic syringes (100ml, 60ml, 20ml, 10ml and 5ml) • Sticky tape • Balloons

Develop **Lesson 1: Investigating pneumatics** P. of Study Design and technology 4 Year 5 Evaluate Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. 3 Year 5 Technical Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). Knowledge Year 5 Testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture. Year 5 Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. These effects can be achieved using syringes and plastic tubing. Skill(s) Year 5 Test and evaluate products against a detailed design specification and make adaptations as they develop the product. Year 5 Use mechanical systems in their products, such as pneumatics.	Ask the children to recall what they learned about pneumatics in the previous lesson and how they are used in machines to create movement. Provide them with the Pneumatics challenge planning sheet. Introduce the challenge and provide the children with the practical resources. Give groups of children 45 minutes to complete the task. At the end of the session, ask the children to show their work to others and evaluate their task using the Pneumatics challenge evaluation sheet. Encourage them to list any difficulties they had or changes they made to their product and encourage them to describe what they have learned from the task.	• Plastic syringes and tubing • Joining materials, such as sticky tape, masking tape and wire • Balloons • Small, cardboard boxes with lids, such as teabag boxes • Finishing and decorating materials
Lesson 2: Making a pneumatic machine P. of Study Design and technology 3 Year 5 Technical Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. 2 Year 5 Make Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. Knowledge Year 5 Various methods can be used to support a framework. These include cross braces, guy ropes and diagonal struts. Frameworks can be built using lolly sticks, skewers and bamboo canes. Year 5 There are many rules for using tools safely and these may vary depending on the tools being used. For example, someone using a chisel should chip or cut with the cutting edge pointing away from their body. All tools should be cleaned and put away after use, and should not be used if they are loose or cracked. Year 5 Different mechanisms and systems can work together to perform a function. A strong and stable structure is necessary to support different mechanisms in a machine. Skill(s) Year 5 Build a framework using a range of materials to support mechanisms. Year 5 Name and select increasingly appropriate tools for a task and use them safely.	Watch the Young Engineers: Pneumatic machine video and discuss how the strong structure, pneumatic system and lever work together to make a machine that can lift a load. Invite pairs or groups of children to make a version of the machine in the video, using the techniques and equipment shown. Encourage the children to problem-solve until their machine works smoothly, then ask them to draw a labelled diagram of their machine on the Pneumatic machine recording sheet. **Note:** The syringe topper used in the video is not available in the UK. As an alternative, wrap the middle of a pipe cleaner around the top of the syringe's plunger and twist to secure. Wrap the two ends of the pipe cleaner around the lifting arm and twist the ends together to make a loose loop.	• Lollipop sticks • Sticky or masking tape • Plastic syringes and tubing • Pipe cleaners • Cable ties • Junk modelling materials • Finishing and decorating materials • Computers or tablets
Innovate **Lesson 1: Designing a pneumatic prototype** P. of Study Breadth Design and technology 1 Year 5 Aims Critique, evaluate and test their ideas and products and the work of others. 3 Year 5 Technical Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). Knowledge Year 5 Safety features are often incorporated into products that might cause harm. Some examples include the child-safety caps on medicine bottles, seatbelts in cars, covers for electrical sockets and finger guards on doors. Year 5 Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. These effects can be achieved using syringes and plastic tubing. Year 5 Pneumatic systems can be used to lift heavy loads, raise and lower platforms or soften a force by acting as a shock absorber. Skill(s)Year 5 Explain the functionality and purpose of safety features on a range of products. Year 5 Use mechanical systems in their products, such as pneumatics.	Ask the children to design a prototype for an object, furniture or gadget that uses pneumatics to make life easier or more comfortable around the home. Before they start, display the Design criteria information sheet and show the children the practical resources. Encourage the children to gather their ideas using discussion, annotated and exploded diagrams and simple modelling, then ask them to choose one idea to make into a prototype. Ask the children to fill in the Pneumatic product prototype planning sheet. Encourage them to incorporate the building techniques learned in this and earlier projects.	• Junk modelling materials • Plastic syringes and tubing • Balloons • Joining materials • Finishing and decorating materials
Lesson 2: Making a pneumatic prototype P. of Study Design and technology 4 Year 5 Evaluate Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. 6 Year 5 Make 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. Knowledge Year 5 Testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture.	Ask the children to gather the resources they need to build their prototype. Before they start, share and discuss the Iterative design process poster. Encourage the children to follow the process as they work, implement their initial plan, regularly test their prototype, evaluate its success, and then adjust their design until they have a working prototype that they can deploy. At the end of the session, ask the children to provide feedback about the task and the iterative process.	• Junk modelling materials • Plastic syringes and tubing • Balloons • Joining materials • Finishing and decorating materials

Year 5 Materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together using a variety of stitching techniques. Year 5 Design is an iterative process, meaning that once an initial prototype has been designed it is continually tested and improved until the final product is deployed. Skill(s) Year 5 Test and evaluate products against a detailed design specification and make adaptations as they develop the product. Year 5 Select and combine materials with precision.		• Camera or tablet
Express **Evaluation** P. of Study Design and technology Evaluate 4 Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Knowledge Year 5 A focus group is a small group of people whose reactions and opinions about a product are taken and studied. Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria. Skill Year 5 Survey users in a range of focus groups and compare results.	Ask the children to present their prototype to two small focus groups, one made up of children from school and one made up of adults. Encourage them to use the Pneumatic product prototype evaluation sheet questions to lead a discussion about their prototype with each group. Encourage the focus groups to use the prototype, ask questions, comment on the design, explain what they like and suggest any improvements. Use a device to record an audio of the focus group discussions to refer to later, if needed. After receiving feedback, encourage each design team to discuss the similarities and differences in the feedback from the focus groups and identify any key points raised. Encourage the children to fill in the evaluation sheet at the end of the session to record their findings.	• Audio recording device

Cycle A Year 5 / 6 Design and Technology Scheme of Work
Spring 2 - Eat the Seasons

Overview: This project teaches children about the meaning and benefits of seasonal eating, including food preparation and cooking techniques.

Vocabulary:
Food preparation and cooking: Blend, Boil, Brown, Chop, Cooked, Dice, Food hygiene, Food preparation, Grate, Health and safety, Mash, Peel, Puree, Sauté, Simmer, Steam.
Nutrition: Carbohydrate, Fat, Fibre, Fresh, Fruit, Healthy, Kilocalorie, Kilojoule, Mineral, Nutrient, Nutritional Value, Protein, Salt, Saturated fat, Seasonal food, Soup, Sugar, Vegetable, Vitamin.
Origins of food: Produce, Seasonal Fruit, Seasonal Vegetable, Seasonality.

Assessment outcomes:
While the soups are still warm, encourage the children to taste test their soups. Invite the children to reflect on their recipes and cooking techniques as they complete the Soup evaluation sheet. Encourage them to share their evaluations and to taste each other's soups and offer feedback. At the end of the session, ask the children to make any amendments to their recipes, in light of their evaluation and feedback, then ask them to produce final copies to go into a class soup cookbook.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage **Lesson 1: Seasonality** P. of Study Design and technology Food 4 Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Knowledge Year 5 Seasonality is the time of year when the harvest or flavour of a type of food is at its best. Buying seasonal food is beneficial for many reasons: the food tastes better; it is fresher because it hasn't been transported thousands of miles; the nutritional value is higher; the carbon footprint is lower, due to reduced transport; it supports local growers and is usually cheaper. Specific knowledge Year 5 Food hygiene is important to prevent the spread of disease-causing microorganisms. Skill Year 5 Describe what seasonality means and explain some of the reasons why it is beneficial.	Ask the children to read the Seasonality information sheet and discuss the meaning and benefits of seasonal eating. Provide them with a range of seasonal fruits and vegetables, including some unusual varieties, raw or cooked. Invite the children to taste and evaluate each one, recording their observations on the Seasonal food recording sheet, then discuss their opinions. Explain how fruit and vegetables provide people with the essential nutrients, such as vitamins, minerals and fibre, that our bodies need to stay healthy.	• Range of cooked and raw seasonal fruit and vegetables, including some unusual varieties
Develop **Lesson 1: Benefits of seasonal eating** P. of Study Design and technology 3 Year 5 Food Understand and apply the principles of a healthy and varied diet. P. of Study RHE - Health education3 Year 5 Healthy Know what constitutes a healthy diet (including understanding calories and other nutritional content). Knowledge Year 5 A balanced diet gives your body all the nutrients it needs to function correctly. This means eating a wide variety of foods in the correct proportions. Skill(s)Year 5 Evaluate meals and consider if they contribute towards a balanced diet.	Recap on the meaning of seasonality and ask the children if they know of any fruit and vegetables that are currently in season? Ask them to work in groups to look at the BBC Good Food Seasonal calendar to find out what fruit and vegetables are currently in season. Then, challenge the children to use the Recipes on the BBC Good Food website to find a soup recipe that could be created using the seasonal produce available. When the children have found a recipe, ask them to read it carefully and identify the preparation techniques required to create the dish. Encourage them to write a copy of the recipe, along with notes about the techniques they would need to master, any ingredients they will need and the nutritional value of the soup.	• Computers or tablets
Lesson 2: Dicing, peeling and grating P. of Study Design and technology Food 4 Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Knowledge Year 5 Sweet dishes are usually desserts, such as cakes, fruit pies and trifles. Savoury dishes usually have a salty or spicy flavour rather than a sweet one. Specific knowledge Year 5 Food hygiene is important to prevent the spread of disease-causing microorganisms. Skill Year 5 Use an increasing range of preparation and cooking techniques to cook a sweet or savoury dish.	Provide the children with the Health and safety information sheet and discuss the points listed. Provide a range of UK grown, seasonal produce for the children to use to prepare and cook a selection of their soup recipes. Encourage them to try different techniques, such as dicing, peeling, grating, boiling, steaming or sautéing. Guide the children's work, showing them how to use the equipment, and demonstrating cooking techniques, when required. When the soups are ready, encourage the children to taste the soup before filling in the Soup evaluation sheet. Ask the children to share their findings with others.	• Ingredients and equipment for making soup, including UK grown, seasonal produce
Innovate **Lesson 1: Designing** P. of Study Design and technology 3 Year 5 Food Understand and apply the principles of a healthy and varied diet.	Explain to the children that they will be designing and making a healthy, seasonal soup for four people, using some of the ingredients and techniques they have explored in previous sessions. Encourage the children to talk about the seasonal ingredients available, their preferences and the cooking techniques they could use.	• Computers or tablets

P. of Study RHE - Health education 3 Year 5 Healthy Know what constitutes a healthy diet (including understanding calories and other nutritional content). Knowledge Year 5 A balanced diet gives your body all the nutrients it needs to function correctly. This means eating a wide variety of foods in the correct proportions. Skill(s) Year 5 Evaluate meals and consider if they contribute towards a balanced diet.	Ask them to record their recipe on the Seasonal soup recipe recording sheet. Ensure the children have included a list of ingredients, a step-by-step guide to making the soup and any appropriate health and safety advice. Then, ask the children to use the Nutritional values information sheet and other ingredients' packaging to calculate the nutritional value of their soup. At the end of the session, invite the children to share their designs with a partner and check that they have included all the components.	
Lesson 2: Making P. of Study Design and technology Food 4 Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Knowledge Year 5 Sweet dishes are usually desserts, such as cakes, fruit pies and trifles. Savoury dishes usually have a salty or spicy flavour rather than a sweet one. Skill Year 5 Use an increasing range of preparation and cooking techniques to cook a sweet or savoury dish. **Taste test:** P. of Study Design and technology 3 Year 5 Food Understand and apply the principles of a healthy and varied diet. P. of Study RHE - Health education 3 Year 5 Healthy Know what constitutes a healthy diet (including understanding calories and other nutritional content). Knowledge Year 5 A balanced diet gives your body all the nutrients it needs to function correctly. This means eating a wide variety of foods in the correct proportions. Skill(s) Year 5 Evaluate meals and consider if they contribute towards a balanced diet.	Ask the children to read their recipes carefully and gather all the equipment and ingredients they need to make their seasonal soups. Remind them about health and safety in the kitchen. Ask the children to prepare and cook their soups with care and attention. Encourage them to taste their soups frequently, using a clean spoon, checking the flavour and adjusting the quantities of ingredients or cooking techniques accordingly. If any changes are made, encourage the children to make notes on their recipes to remind them what they have done. When the soups are ready, ask the children to present them professionally, before taking a photograph. Share the dishes with others at the end of the session. While the soups are still warm, encourage the children to taste test their soups. Invite the children to reflect on their recipes and cooking techniques as they complete the Soup evaluation sheet. Encourage them to share their evaluations and to taste each other's soups and offer feedback. At the end of the session, ask the children to make any amendments to their recipes, in light of their evaluation and feedback, then ask them to produce final copies to go into a class soup cookbook.	• Ingredients and equipment for making soup, including UK grown, seasonal produce • Camera or tablets

Cycle A Year 5 / 6 Design and Technology Scheme of Work
Summer 2 - Architecture

Overview:
This project teaches children about how architectural style and technology has developed over time and then uses this knowledge to design a building with specific features.

Vocabulary:
Evaluation:
Discuss, Evaluation, Improve.
Generation of ideas:
Computer-aided design, Design, Product.
Everyday products:
Baroque, Classical, Corinthian column, Doric column, Gothic, Industrial, Ionic column, Modernist, Postmodern, Renaissance, Ancient Egyptian, Architecture, Building, Caryatid, Entablature, Frieze, Pediment, Prehistoric, Style, Sustainable, Temple.
Structures:
Column, Framework, Lintel, Post, Stability, Stiffness, Structure, Support.
Materials for purpose:
Appearance, Functional, Stability, Stiffness.
Significant people:
Roman builders, Ancient Egyptians, Prehistoric builders.

Assessment outcomes:
Encourage the children to explore and discuss the models and plans of others and ask questions about the designs. After the discussion, provide the Building design evaluation sheet and encourage each child to evaluate their design and construction. At the end of the session ask, 'Does your building have stability, useful spaces and an attractive appearance?'

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage **Lesson 1: Architecture over time** P. of Study Design and technology 3 Year 5 Evaluate Investigate and analyse a range of existing products. 1 Year 5 Evaluate Understand how key events and individuals in design and technology have helped shape the world. Knowledge Year 5 Culture is the language, inventions, ideas and art of a group of people. A society is all the people in a community or group. Culture affects the design of some products. For example, knives and forks are used in the western world, whereas chopsticks are used mainly in China and Japan. The design of products needs to take into account the culture of the target audience. For example, colours might mean very different things in different cultures. Year 5 Many new designs and inventions influenced society. For example, labour-saving devices in the home reduced the amount of housework, which was traditionally done by women. This enabled them to have jobs. Skill(s) Year 5 Explain how the design of a product has been influenced by the culture or society in which it was designed or made. Year 5 Describe the social influence of a significant designer or inventor.	Show the children the Architecture over time presentation. Ask the children to note down key features about each form of architecture under the pictures on the Architecture timeline template and include one major change that happened from one period to the next. Encourage them to use their findings to answer the enquiry question, 'How have buildings developed over time?'	

Develop **Lesson 1: Greek architecture** P. of Study Design and technology Evaluate 3 Investigate and analyse a range of existing products. Knowledge Year 5 Culture is the language, inventions, ideas and art of a group of people. A society is all the people in a community or group. Culture affects the design of some products. For example, knives and forks are used in the western world, whereas chopsticks are used mainly in China and Japan. The design of products needs to take into account the culture of the target audience. For example, colours might mean very different things in different cultures. Specific knowledge Year 5 The ancient Greeks developed the Classical form of architecture. They used columns to support roofs, which had three main orders; Doric, Ionic and Corinthian. Ancient Greek buildings were symmetrical and beautiful. Roofs had a triangular shaped part, called the pediment, and a wide horizontal part, usually decorated with a frieze, called the entablature. Greek buildings were usually made from limestone or marble. Skill Year 5 Explain how the design of a product has been influenced by the culture or society in which it was designed or made.	Show the children the Greek architecture presentation. Discuss the main features of Greek architecture, including the materials used, the three orders (Ionic, Doric and Corinthian) and other features of Greek buildings, such as the pediment and frieze. Ask the children to look at the Classical architecture recording sheet and encourage them to spot and label any of the features. As they work, point out that not all of the buildings are Greek, but the style of architecture has been recreated through time, especially for important buildings.	
Lesson 2: Support stiffness and stability P. of Study Design and technology Technical 3 Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Knowledge Year 5 Various methods can be used to support a framework. These include cross braces, guy ropes and diagonal struts. Frameworks can be built using lolly sticks, skewers and bamboo canes. Specific knowledge Year 5 Support, stiffness and stability can be created by using triangular shapes to create strong frameworks, columns to support roofs and overlapping brickwork patterns. Skill Year 5 Build a framework using a range of materials to support mechanisms.	Gather the materials listed in the Support, stiffness and stability information pack, then ask the children to work through each activity to show how support, stiffness and stability can be created in structures. At the end of the session, ask the children to write an answer to the question 'How is support, stiffness and stability created in structures?' using diagrams or photographs of their work to illustrate.	• Range of construction materials, including drinking straws, string, sticky tack, A4 paper, sticky tape and stiff Perspex • Cameras • Weights • Tray • Building blocks
Lesson 3: Computer aided designs P. of Study Design and technology 1 Year 5 Design 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. 1 Year 5 Design Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Knowledge Year 5 A pattern piece is a drawing or shape used to guide how to make something. There are many different computer-aided design packages for designing products. Year 5 Computer-aided design (CAD) is the use of specialised computer software to design objects. CAD can help designers to create better quality, clearer designs and make changes easily. CAD designs can also be made into objects using 3-D printers. Skill(s) Year 5 Use pattern pieces and computer-aided design packages to design a product.	Explain to the children that computer-aided design software helps engineers and designers in many industries to create, design and 3-D print objects. Introduce the children to CAD software, such as SketchUp for Schools, which is available to schools with G Suite for Education or Microsoft Education. Demonstrate how to use the software tools to create shapes, push and pull blocks to make windows, doors and a roof and choose textures and finishes. As you work, show the children how to orbit their design to see it from all angles. After the demonstration, ask the children to design a temple, including at least one feature of classical Greek architecture, such as a pediment or columns. Encourage the children to share their designs with others, explaining specific design features, and making changes based on feedback. At the end of the session discuss their experiences of using the CAD software.	• Computers or tablets • CAD software, such as SketchUp for Schools
Innovate **Building design** P. of Study Design and technology 3 Year 5 Technical Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. 6 Year 5 Make 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. Knowledge Year 5 Various methods can be used to support a framework. These include cross braces, guy ropes and diagonal struts. Frameworks can be built using lolly sticks, skewers and bamboo canes. Year 5 Materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together using a variety of stitching techniques. Skill(s) Year 5 Build a framework using a range of materials to support mechanisms. Year 5 Select and combine materials with precision.	Set the children the design task to use what they have learned to design an impressive, yet functional, building. Encourage the children to experiment with construction kits, junk modelling materials, card, paper, straws and fixing materials to test out their ideas and create a final design. Encourage the children to record the different stages of their experimentation, taking photographs of the buildings that they create at different stages of development, labelling the features that add stability, describing the useful space created and explaining how the appearance of the building has been enhanced. They should also identify any influences from different styles of architecture. Encourage them to modify their design as they work to improve the stability, function and appearance of their structures and to help them finish their work to a high standard. Encourage them to take a photograph of their final structures.	• Construction kits • Junk modelling materials • Card • Paper • Straws • Fixing materials • Cameras

Express **Evaluation** P. of Study Design and technology Evaluate 4 Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Knowledge Year 5 Testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture. Skill Year 5 Test and evaluate products against a detailed design specification and make adaptations as they develop the product.	Encourage the children to explore and discuss the models and plans of others and ask questions about the designs. After the discussion, provide the Building design evaluation sheet and encourage each child to evaluate their design and construction. At the end of the session ask, 'Does your building have stability, useful spaces and an attractive appearance?'	

Cycle B Year 5 / 6 Design and Technology Scheme of Work
Autumn 2 - Food for Life

Overview:
This project teaches children about processed food and healthy food choices. They make bread and pasta sauces and learn about the benefits of whole foods. They plan and make meals as part of a healthy daily menu, and evaluate their completed products.

Vocabulary:
Evaluation:
Evaluate, evaluation, feedback, modification, reflect
Compare and contrast:
Advantage, compare, comparison, disadvantage, ingredient, nutritional value, taste, texture, use by date
Food preparation and cooking:
Bake, blend, boil, brush, chop, cool, crush, cut, dough, fry, halve, health and safety, heat, hygiene, knead, mash, mix, peel, pour, prove, recipe, reheat, simmer, slow, cook, spoon, spread, sprinkle, stir, store, yeast
Nutrition:
Eatwell guide, balanced, carbohydrate, daily menu, dairy, diet, fruit, healthy, oil, organic, protein, vegetable
Origins of food:
animal feed additive, farm, fertiliser, labour intensive, organic, pesticide, whole food

Assessment outcomes:
Give each child a photograph of their meal. Invite the children to reflect on the recipes followed and the meals made to complete the Meal evaluation sheet. Ask the children to make any modifications to their chosen recipe in light of their evaluation and feedback.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage - Exploring processed foods P. of Study Design and technology Evaluate 7 Investigate and analyse a range of existing products. Knowledge Year 6 Products and inventions can be compared using a range of criteria, such as the impact on society, ease of use, appearance and value for money. Knowledge Year 6 People's lives have been improved in countless ways due to new inventions and designs. For example, the Morrison shelter, designed by John Baker in 1941, was an indoor air-raid shelter used in over half a million homes during the Second World War. It saved the lives of many people caught in bombing raids. Specific knowledge Year 6 A processed food is changed during preparation and includes processes, such as cooking, freezing, pasteurising, or the addition of ingredients. Pros of processed foods include convenience and availability. Cons include a lack of nutrients and unhealthy ingredients. Skill Year 6 Create a detailed comparative report about two or more products or inventions. Skill Year 6 Analyse how an invention or product has significantly changed or improved people's lives.	Recap on the importance of a healthy lifestyle and the role of a healthy, balanced diet. Show the children the Processed food presentation and discuss the issues raised. Give the children a selection of processed food packaging and ask them to choose six different products. Encourage each child to complete the Processed food recording sheet to compare their chosen products. Discuss their findings and answers to the questions on the sheet. Ask the children for their thoughts on whether any processed foods have a place in a healthy, balanced diet.	• Processed food packaging, such as packaging from ready meals, cans of soup or vegetables, frozen vegetables, sliced bread, sausage rolls, custard powder and jars of pasta sauce
Develop **Lesson 1: Comparing processed and homemade bread** P. of Study Design and technology • 7 Year 6 Evaluate Investigate and analyse a range of existing products. • 3 Year 6 Food Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Knowledge	Recap on the use of processed foods and explain that they will compare a processed product with a homemade version. Show the children a shop-bought, processed, wholemeal loaf of bread. Look at the packaging and encourage the children to record their observations on the Comparing processed and homemade bread recording sheet. Explain that they will now make a homemade loaf of wholemeal bread so that they can make comparisons. Read the Wholemeal bread recipe together. Demonstrate and explain the techniques and discuss the use of yeast, kneading and proving.	• Shop-bought wholemeal loaf • Ingredients for making wholemeal bread, including strong wholemeal flour, salt, fast-action dried yeast, olive oil and clear honey

• Year 6 Products and inventions can be compared using a range of criteria, such as the impact on society, ease of use, appearance and value for money. • Year 6 Ingredients can usually be bought at supermarkets, but specialist shops may stock different items. Greengrocers sell fruit and vegetables, butchers sell meat, fishmongers sell fresh fish and delicatessens usually sell some unusual prepared foods, as well as cold meats and cheeses. • Year 6 Sliced bread is processed. It can contain many more ingredients than homemade bread, including preservatives and artificial ingredients. **Skill(s)** • Year 6 Create a detailed comparative report about two or more products or inventions. • Year 6 Follow a recipe that requires a variety of techniques and source the necessary ingredients independently.	Invite groups of children to follow the recipe to make a loaf of wholemeal bread. While the bread is proving, encourage the children to record the ingredients and use by date of the homemade loaf on their Comparing processed and homemade bread recording sheet. When baked and cooled, ask the children to explore the loaves' taste and texture and make comparisons. Encourage them to complete their recording sheet with their observations and use the information gathered to answer the questions. **Note:** Discuss hygiene rules associated with food preparation, including wearing an apron, washing hands, washing fruit and vegetables to remove soil or chemicals and maintaining a clean workspace. **Check for allergies and gain parental permission before tasting food.**	• Equipment, including a mixing bowl, loaf tin, large plastic food bag and cooling rack
Lesson 2: Whole foods **P. of Study Design and technology** • Year 6 Food Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. • 1 Year 6 Food Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. **Knowledge** • Year 6 Ingredients can usually be bought at supermarkets, but specialist shops may stock different items. Greengrocers sell fruit and vegetables, butchers sell meat, fishmongers sell fresh fish and delicatessens usually sell some unusual prepared foods, as well as cold meats and cheeses. • Year 6 Organic produce is food that has been grown without the use of man-made fertilisers, pesticides, growth regulators or animal feed additives. Organic farmers use crop rotation, animal and plant manures, hand-weeding and biological pest control. • Year 6 A recipe provides information to prepare a dish, including ingredients, quantities and a method. They may also contain nutritional information. **Skill(s)** • Year 6 Follow a recipe that requires a variety of techniques and source the necessary ingredients independently. • Year 6 Explain how organic produce is grown.	Show the Whole foods presentation. Discuss the benefits of whole foods and the differences between whole foods and processed foods. Tell the children that they will be using whole foods to make a variety of homemade pasta sauces. Provide the children with the Homemade pasta sauce recipes. Read the recipes and invite groups of children to follow the recipes to make the sauces. Invite the children to taste the sauces and record their findings on their Homemade pasta sauce evaluation sheet. **Note:** Discuss hygiene rules associated with food preparation, including wearing an apron, washing hands, washing fruit and vegetables to remove soil or chemicals and maintaining a clean workspace. **Check for allergies and gain parental permission before tasting foods.**	• Ingredients for making pasta sauces (see recipes for more details) • Cooking equipment including frying pans, saucepans, blenders, chopping boards, sharp knives, roasting tins, bowls, garlic presses and sieves
Express - Evaluation **P. of Study Design and technology Evaluate** 3 Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. **Knowledge Year 6** Design is an iterative process, meaning alterations and improvements are made continually throughout the manufacturing process. Evaluating a product while it's being manufactured, and explaining these evaluations to others, can help to refine it. **Skill Year 6** Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others.	Give each child a photograph of their meal. Invite the children to reflect on the recipes followed and the meals made to complete the Meal evaluation sheet. Encourage the children to give feedback to each other. Ask the children to make any modifications to their chosen recipe in light of their evaluation and feedback.	• Photographs of the prepared meals

Cycle B Year 5 / 6 Design and Technology Scheme of Work
Spring 2 - Engineer

Overview:
This project teaches children about remarkable engineers and significant bridges, learning to identify features, such as beams, arches and trusses. They complete a bridge-building engineering challenge to create a bridge prototype.

Vocabulary:
Evauation:
Analysis, evaluation, feedback, improve, problem, results
***Compare and Contrast*:**
arch bridge, beam bridge, compare, material, span, support, suspension bridge, truss bridge, type
Investigation:
Concertina, investigation, layers, shape, strength, strengthening
Materials for purpose:
Stability, strength, strengthening
Generation of ideas:
annotated diagram, design, design criteria, exploded diagram, modelling, prototype, test
Structures:
Bridge, force, structure, triangle
Significant people:
Isambard Kingdom Brunel, Sir Benjamin Baker, Sir John Fowler, Thomas Telford, engineer

Assessment outcomes:
Invite the children to complete stage three detailed in the Bridge challenge design brief presentation. Test the bridges for strength using 2p coins. Ask the children to record the results on the Bridge challenge evaluation sheet.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage **Lesson 1: Bridges and engineers** P. of Study Design and technology • 7 Year 6 Evaluate Investigate and analyse a range of existing products. • 1 Year 6 Evaluate Understand how key events and individuals in design and technology have helped shape the world. Knowledge • Year 6 People's lives have been improved in countless ways due to new inventions and designs. For example, the Morrison shelter, designed by John Baker in 1941, was an indoor air-raid shelter used in over half a million homes during the Second World War. It saved the lives of many people caught in bombing raids. • Year 6 The significance of a designer or inventor can be measured in various ways. Their work may benefit society in health, transport, communication, education, the built environment or technology. It may enhance culture in different areas, such as fashion, ceramics or computer games. • Year 6 Bridges provide a safe route over obstacles, including roads and rivers. They are used by pedestrians, cars, trains and pipelines.	Ask the children to read the Bridges and engineers information sheet to find out about the history of bridges and how engineers improved people's lives in the United Kingdom through their innovative bridge designs. Discuss the information provided, then encourage the children to complete the Bridges and engineers question sheet in their books. At the end of the session, talk through the children's responses to the questions and explain that they will learn more about bridges, bridge design and bridge construction during the project.	

Skill(s) • Year 6 Analyse how an invention or product has significantly changed or improved people's lives. View progression • Year 6 Present a detailed account of the significance of a favourite designer or inventor.		
Lesson 2: Features of bridges **P. of Study** **Design and technology** **Evaluate** 7 Investigate and analyse a range of existing products. **Knowledge** Year 6 Products and inventions can be compared using a range of criteria, such as the impact on society, ease of use, appearance and value for money. **Specific knowledge** Year 6 The four main bridge types are the beam bridge, arch bridge, truss bridge and suspension bridge. They each spread forces in different ways to remain strong and stable. **Skill** Year 6 Create a detailed comparative report about two or more products or inventions.	Introduce the different types of bridges by sharing the Bridges presentation. Discuss the structures of bridges, the importance of balanced forces and the features that make them strong and stable. Provide small groups of children with the Bridges sorting cards and ask them to sort the bridges into the four bridge types. Discuss the bridge designs on each picture card, and identify the key features. Check the children's sorting, then ask them to choose two types of bridges to compare. Challenge them to look closely at the pictures and identify similarities and differences in shape, construction, materials, span and support between the two types of bridges. Encourage the children to record their thinking on the Comparing bridges recording sheet and share their findings at the end of the session.	
Develop **Lesson 1: Strengthening paper bridges** **P. of Study** **Design and technology** • 2 Year 6 **Technical** Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. • 5 Year 6 **Make** 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. **Knowledge** • Year 6 Strength can be added to a framework by using multiple layers. For example, corrugated cardboard can be placed with corrugations running alternately vertically and horizontally. Triangular shapes can be used instead of square shapes because they are more rigid. Frameworks can be further strengthened by adding an outer cover. • Year 6 It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability. **Skill(s)** • Year 6 Select the most appropriate materials and frameworks for different structures, explaining what makes them strong. View progression • Year 6 Choose the best materials for a task, showing an understanding of their working characteristics.	Provide pairs of children with sheets of A4 paper and the Strengthening paper bridges instructions. Encourage them to follow the instructions to investigate different ways of strengthening paper bridges, recording their results on the Strengthening paper bridges recording sheet. After completing the tasks, ask them to share and compare their findings with others, asking questions, such as 'What happens to the bridge's strength as the layers of paper increase? Was the U-shaped bridge stronger than the flat paper bridge? Did the number of folds in the concertina affect the bridge's strength? Why do you think that folded paper supported more weight than unfolded paper?' At the end of the session, provide the children with pieces of corrugated cardboard and ask them to describe how it has been strengthened.	• A4 paper • 2p coins • Books for bridge supports • Rulers and pencils • Masking tape • Corrugated cardboard
Lesson 2: Triangles for strength **P. of Study** **Design and technology** • 2 Year 6 **Technical** Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. • 5 Year 6 **Make** 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. **Knowledge** • Year 6 Strength can be added to a framework by using multiple layers. For example, corrugated cardboard can be placed with corrugations running alternately vertically and horizontally. Triangular shapes can be used instead of square shapes because they are more rigid. Frameworks can be further strengthened by adding an outer cover. • Year 6 It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability.	Show the Triangles for strength presentation and discuss the information provided. Give groups of four children a sheet of A4 paper, a 1m length of masking tape, eight art straws, scissors, rulers and pencils. Challenge each group to use triangles to build a strong bridge using the materials. Take a photograph of each bridge as a permanent record of their work. Test the bridges to find the strongest by placing each across a gap and recording how many 2p coins each can hold before collapsing on the Triangles for strength recording sheet. Analyse the results as a class to investigate why some designs were weaker than others and how triangles provided strength and stability. Encourage the children to share their findings at the end of the lesson.	• A4 paper • Art straws • Masking tape • Scissors • 2p coins • Rulers • Pencils • Camera

• Year 6 Triangles are a strong shape used by engineers to add strength to a structure. When a force is applied to a triangle, it is distributed down each side, making triangles difficult to distort or collapse. Skill(s) • Year 6 Select the most appropriate materials and frameworks for different structures, explaining what makes them strong. View progression • Year 6 Choose the best materials for a task, showing an understanding of their working characteristics.		
Express - Evaluation P. of Study Design and technology Evaluate 3 Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Knowledge Year 6 Design is an iterative process, meaning alterations and improvements are made continually throughout the manufacturing process. Evaluating a product while it's being manufactured, and explaining these evaluations to others, can help to refine it. Skill Year 6 Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others.	Invite the children to complete stage three detailed in the Bridge challenge design brief presentation. Before testing, encourage the children to describe the iterative process and the changes they made to their designs during the construction of their model. Test the bridges for strength using 2p coins. Ask the children to record the results on the Bridge challenge evaluation sheet. Discuss the strongest bridges and the features that gave them strength and stability and encourage them to suggest possible improvements. At the end of the session, ask each child to complete the evaluation sheet to record their finding.	• Small paper cups • 2p coins

Cycle B Year 5 / 6 Design and Technology Scheme of Work
Summer 2 - Make Do and Mend

Overview:
This project teaches children a range of simple sewing stitches, including ways of recycling and repurposing old clothes and materials.

Vocabulary:
Evauation:
Adapt, change, repurpose
***Compare and Contrast*:**
Compare, evaluate
Everyday products:
Blouse, clothing, dress, fabric, fashion, garment, handmade, hat, jacket, jeans, recycle, repair, shirt, skirt, sock, trousers
Investigation:
Velcro, blanket stitch, button, decorative, embroidery, fabric property, fastening, function, investigate, label, needle, observation, press stud, ribbon, running stitch, Seam, thread, tie, toggle, whip stitch, zip
Materials for purpose:
Recycled
Cutting and joining textiles
Pin, repair, stitch, tack
Decorating and embellishing textiles
Velcro, button, embroidery, fastening, press stud, ribbon, sew, tie, toggle, zip

Assessment outcomes:
Ask the children to work with a partner to discuss and compare their final products. Invite them to use the Mrs Sew and Sew's challenge evaluation sheet to record their thoughts about their product.

Lesson objective(s)	Suggested activities and differentiation	Resources
Engage - Make Do and Mend campaign P. of Study Design and technology Evaluate 7 Investigate and analyse a range of existing products. Knowledge Year 6 People's lives have been improved in countless ways due to new inventions and designs. For example, the Morrison shelter, designed by John Baker in 1941, was an indoor air-raid shelter used in over half a million homes during the Second World War. It saved the lives of many people caught in bombing raids. Specific knowledge Year 6 In 1941, the British government introduced clothes rationing. This was to limit the amount of labour and materials used in clothes production, so that it could be used to support the greater war effort. Skill Year 6 Analyse how an invention or product has significantly changed or improved people's lives.	Begin the project by asking the children to read the Make Do and Mend information sheet and watch the videos in the useful links. After doing their research, ask the children to explain what the Make Do and Mend campaign was and how it influenced family life, fashion and the war effort in general. Challenge the children to use their findings to create a digital scrap page on the theme, inserting text and images on the Make Do and Mend scrap page template to help them present their ideas. At the end of the session, invite the children to share and compare their ideas and answer the summary question, 'How did the Make Do and Mend campaign influence life in Britain during the Second World War? **Useful links:** • Clothes Rationing in Britain: Make Do and Mend – YouTube • Mrs Sew & Sew – YouTube • Imperial War Museum How fashion survived WW2 rationing – YouTube • Make Do And Mend – YouTube	• Computers or tablets
Develop **Lesson 1: Deconstruct** P. of Study Design and technology Make 4 Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. Knowledge Year 6 Precision is important in producing a polished, finished product. Correct selection of tools and careful measurement can ensure the parts fit together correctly. Specific knowledge Year 6 Deconstructing garments identifies how they were made, the materials used and their properties. Skill Year 6 Select appropriate tools for a task and use them safely and precisely.	Provide a selection of old clothing, such as trousers, shirts, skirts, blouses, dresses and jackets that can be cut up and used for investigative work. Organise the children into small groups and provide each group with one of the items. Ask the children to investigate the clothing, looking at their function, decorative features and assessing each garment's opportunity for repurposing. Provide a stitching unpicker for each group to unpick seams and decorative stitches. Give out the Clothing investigation table for each group to complete. At the end of the session, invite the children to share and compare their findings.	• Old clothing • Scissors and seam unpickers

Lesson 2: Stitch P. of Study Design and technology Make 4 Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. Knowledge Year 6 Precision is important in producing a polished, finished product. Correct selection of tools and careful measurement can ensure the parts fit together correctly. Specific knowledge Year 6 Hand stitches include running stitch, blanket stitch and whip stitch. Skill Year 6 Select appropriate tools for a task and use them safely and precisely.	Use the Running stitch video, the Whip stitch video and the Blanket stitch video to show children the range of stitches they will be learning and using during their project. Show the videos as many times as necessary to reinforce the techniques. Organise the children into small groups and set out the Stitching instructions and resources. Allow the children to practice the stitches, making sure there is sufficient adult support where needed. At the end of the session, invite the children to share and compare their stitching, asking them to discuss what they found challenging or interesting about the task. Encourage the children to share any tips they have for improving technique.	• Scissors • Thread • Needle • Fabric squares • Needle threader
Lesson 3: Repair P. of Study Design and technology • 5 Year 6 Make 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. • 4 Year 6 Make Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. Knowledge • Year 6 It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability. • Year 6 Pinning with dressmaker pins and tacking with quick, temporary stitches holds fabric together in preparation for and during sewing. Skill(s) • Year 6 Choose the best materials for a task, showing an understanding of their working characteristics. View progression • Year 6 Pin and tack fabrics in preparation for sewing and more complex pattern work.	Ask the children to bring in a clothing item with a hole or rip that needs repairing, such as a sock, hat or jeans. Invite the children to share their clothing and begin to describe how they think they could be repaired. After discussing their ideas, invite the children to watch either How to darn a sock – Last Minute Laura or Mending 101 – How To Mend Ripped Denim. After watching, give the children the Repairing clothing recording sheet and ask them to complete the planning section. Organise the children into groups according to their challenge and provide the appropriate resources for the task. Allow time for the children to repair their item, helping each other where necessary, in the spirit of a make do and mend sewing group. Where needed, provide computers or tablets so children can revisit the appropriate video. At the end of the session, ask the children to complete the evaluation section of the Repairing clothing recording sheet.	• Computer or tablet • Cameras • Scissors • Thread • Needle • Needle threader
Express - Evaluate P. of Study Design and technology Evaluate 7 Investigate and analyse a range of existing products. Knowledge Year 6 Products and inventions can be compared using a range of criteria, such as the impact on society, ease of use, appearance and value for money. Skill Year 6 Create a detailed comparative report about two or more products or inventions.	Ask the children to work with a partner to discuss and compare their final products. Invite them to use the Mrs Sew and Sew's challenge evaluation sheet to record their thoughts about their product. Display the children's finished work with the Make Do and Mend display banner.	