

Be Brave, Be  
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## Subject Leader Summary – Design & Technology



Year Group Narrative – A summary of what learning

is taught in each phase.

	Cycle A			Cycle B		
KS1	<p><b>Autumn</b></p> <p><b>Shade and Shelter:</b> In this design and technology project, children learn the names and functions of different shelters and observe their similarities and differences. Children revisit the names and properties of materials introduced in the Early Years and the Y1 science project Everyday materials and decide why they have been used to build a variety of shelters.</p> <p>Children are introduced to design criteria. They design and create a prototype shelter to fulfil given criteria. They then design a play den to a set of design criteria and</p>	<p><b>Spring</b></p> <p><b>Bright Lights, Big City:</b> This geography project is taught alongside the design and technology project Taxi! And connects with children's understanding of transport.</p> <p><b>Taxi!:</b> In this design and technology project, children revisit parts of a vehicle, including wheels, axles and chassis, building on construction activities in the Early Years, The explore different methods of making axles and fixing wheels to a chassis, comparing products and using what they learn to design and create a moving model of a</p>	<p><b>Summer</b></p> <p><b>Chop, Slice and Mash:</b> In this design and technology project, children learn about foods and their sources. They learn about preparing food and discover that peeling, tearing, slicing and chopping, mashing and grating are forms of food preparation. They also learn about the important of good hygiene.</p> <p>The children use preparatory techniques to make a healthy salad before tasting and evaluating their dish. They also design a supermarket sandwich, choosing and preparing the ingredient to make</p>	<p><b>Autumn</b></p> <p><b>Remarkable Recipes:</b> In this design and technology project, children learn more about the origins of foods first explored in the Y1 project chop, slice and mash. They learn about the parts of the plants we eat and the variety of foods that come from animal sources. They explore tools used for food preparation and decide which tool is best for a specific task. Children discover why some foods are cooked and learn to read a simple recipe. They choose a new, healthy, school lunch recipe that fits a set of criteria. They make, taste and evaluate their chosen recipe and decide if the dish should be included on the school menu.</p>	<p><b>Spring</b></p> <p><b>Coastline:</b> This geography project is taught alongside the design and technology project Beach Hut and connects with children's understanding of human features at the coast.</p> <p><b>Beach Hut:</b> In this design and technology project, children learn about methods of strengthening and joining materials and develop their woodworking skills to make box frames. They use this learning to design and build a sturdy and attractive beach hut structure according to given design criteria.</p>	<p><b>Summer</b></p> <p><b>Cut, Stitch and Join:</b> In this design and technology project, children build of their knowledge of stitching from the Y1 project Funny Faces and Fabulous Features and materials studied in the Y2 project uses of everyday materials. They are introduced to the contemporary designer Cath Kidston and observe the function and characteristics of the brand. They explore the purpose of a sewing pattern and investigate ways in which fabrics are joined and fastened.</p> <p>Children practise joining practise joining fabrics using glue and running stitches. They observe and explore ways to embellish fabrics using simple printing and adding sewn embellishments, such as buttons, sequins and applique. Children follow a</p>

	<p>work with a supervised group to build their play den, constructing, strengthening and fixing materials carefully and safety. They evaluate their construction verbally and make changes and improvements to their design before evaluating their final product.</p> <p><b>Funny Face and Fabulous Features:</b> In this art and design project, children explore methods of joining textiles and adding embellishments using glue and simple stitches.</p>	<p>taxi, according to given design criteria.</p>	<p>them healthy, tasty and easy to eat on the go. At the end of the project, the children taste and evaluate their products.</p>			<p>simple pattern to make a sewn bag tag.</p> <p><b>Push and Pull:</b> In this design and technology project, children learn that machines make work easier and define the terms machine, components and mechanism. They explore sliders, leavers and linkages and make moving models of all three using joining and finishing techniques. Children apply their learning to design and make greeting cards with moving parts that use these mechanisms.</p>
LKS2	<p><b><u>Autumn</u></b> <b>Cook well, Eat well:</b> In this design and technology project, children learn about food groups and the Eat well guide. They build on learning about why foods are cooked from the Y2 project Remarkable Recipes, by learning methods, such as</p>	<p><b><u>Spring</u></b> <b>Making It Move:</b> In this design and technology project, children revisit knowledge of machines. They recap learning about levers, linkages, sliders, wheels and axles from the Y2 project Push and Pull. Children are</p>	<p><b><u>Summer</u></b> <b>Beautiful Botanicals:</b> In this project, children are introduced to loom weaving and create botanical weaving using found materials.</p> <p><b>Greenhouse:</b> In this design and technology project,</p>	<p><b><u>Autumn</u></b> <b>Fresh Food, Good Food:</b> In this design and technology project, children learn why food deteriorates over time, including the role played by microorganisms. They study inventions and preservation methods, such as drying, canning, pasteurising and cooling, which are used to prolong the shelf life of food. Children learn about the</p>	<p><b><u>Spring</u></b> <b>Functional and Fancy Fabrics:</b> In this design and technology project, children revisit the idea of using fabric to create products previously studied in the Y2 projects Cut, Stitch and Join. They explore how fabric products are used in the home and examine the relationship between functionality and decoration. Children study British textile</p>	<p><b><u>Summer</u></b> <b>Ancient Civilisations:</b> This history project is taught alongside the design and technology project Tom Builders and connects with children's understanding of the significance of ancient buildings.</p> <p><b>Tomb Builders:</b> In this design and technology project, children revisit learning about</p>

	<p>boiling, steaming, roasting, baking and slow cooking. They practise these methods by cooking potatoes and ratatouille. The children choose and make a taco filling, according to specific design criteria, then evaluate their final project.</p>	<p>introduced to the cam mechanism and its parts. They understand that cams can be different shapes and carry out an investigation to describe their movements.</p> <p>Children discover that automata are machines that operate mainly by themselves. They use their knowledge of cam mechanisms and their cutting, joining and finishing skills to design and make a child's automaton toy, following design criteria and evaluating their product.</p>	<p>children investigate greenhouses, studying their design and materials. They create solid and robust structures and frameworks to make mini-greenhouse prototypes using various materials and suitable strengthening, finishing and joining techniques.</p>	<p>chronology of food packaging inventions and how these inventions changed people's everyday lives.</p> <p>Children investigate a range of food packaging, looking at how it keeps food fresh, the origins of the food and whether the packaging is recyclable. They learn about the factors involved in packaging design, including the use of nets and recyclable materials.</p> <p>Children use their knowledge of healthy eating from previous projects, such as the Y3 project Cook Well, Eat Well and follow recipes to make various healthy snacks before designing and creating a packaged healthy snack that keeps fresh for several hours. They evaluate their snack and packaging, highlighting their successes and suggesting improvements.</p> <p><b>Warp and Weft:</b> In this art and design project, children learn about significant technological advancements in weaving. They learn about ancient Egyptian horizontal looms. Iron Age vertical looms. Anglo-Saxon and</p>	<p>designer William Morris and are inspired to create printed fabrics, finishing them with a sewn hem, embroidery and embellishments.</p>	<p>mechanisms from the Y2 project Y2 project Push and Pull and the Y3 project Making It Move by exploring simple machines, including pulleys, levers, wheels and axles, wedges, inclined planes and screws.</p> <p>They also learn how simple machines are used in combination to create compound machines. They use this learning to understand how ancient builders created significant structures then plan and build a machine prototype that may have been useful in the past.</p>
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				Viking tablet looms, Victorian power-driven looms and modern looms with digital technology. Children also investigate the characteristics of natural (animal and plant-based) and synthetic yarns for appearance, shape, texture, elasticity and type.		
UKS2	<p><b><u>Autumn Moving</u></b>  <b>Mechanisms:</b> In this design and technology project, children learn about pneumatic systems. They use the skills they have learned in this and other projects to plan, design and make a machine and prototype featuring a pneumatic systems and sturdy structure using appropriate materials and joining techniques.</p> <p>They learn about the iterative design process and evaluate and improve their product as it progresses. Children also use focus groups to evaluate their finished</p>	<p><b><u>Spring Sow, Grow and Farm:</u></b> This geography project is taught alongside the design and technology projects Eat and Seasons and connects with the children's understand of the seasons and seasonal foods.</p> <p><b>Eat the Seasons:</b> In this design and technology project, children explore seasonal foods and why they are beneficial for producers, sellers and consumers. They use a seasonal calendar to identify soup recipes that can be create using seasonal produce and us various</p>	<p><b><u>Summer Groundbreaking</u></b>  <b>Greeks:</b> This history project is taught alongside the design and technology project Architecture and connects with children's understand of chronology and architectural styles developed in ancient Greece.</p> <p><b>Architecture:</b> In this design and technology project, children learn about architectural styles and technology, from prehistoric to ancient Egyptian, Classical, Gothic, Renaissance, Baroque, industrial, Modernist, Postmodernist and modern-day</p>	<p><b><u>Autumn Food for Life:</u></b>  In this design and technology project, children learn about processed foods, including minimally processed and ultra-processed foods. They also learn about food labelling. They compare processed and homemade bread for their number of ingredients, nutritional value, taste, texture and longevity. The children learn about whole organic foods and their advantages and disadvantages. They make pasta sauces using whole food ingredients and a range of preparation techniques practised in previous projects.</p> <p>The children design a healthy daily menu for an 11-year-old child that meets a set of design criteria. They justify their choices before preparing one of the meals. At the end of the project, the children</p>	<p><b><u>Spring Engineer:</u></b>  In this design and technology project, children learn about the role of an engineer and discover some of the most remarkable structures in history. They study the form and function of significant bridges, learning to identify features, such as beams, arches and trusses and discovering how and why some bridges lift and move. Children make models and prototypes before completing a bridge-building engineering challenge.</p>	<p><b><u>Summer Britain at War:</u></b>  This history project is taught alongside the design and technology project Make Do and Mend and connects children's understanding of the influence of the Make Do and Mend campaign on everyday life during and after the Second World War.</p> <p><b>Make Do and Mend:</b> In this design and technology project, children learn about the Second World War campaign, Make Do and Mend, and how it influenced everyday life, fashion and the war effort. They investigate existing clothing for fabric, function, features and fastening, and assess the possibilities for repurposing garments. Children revisit and practise stitching techniques from the Y4 project Functional and Fancy Fabrics, including running, whip and</p>

	<p>products, using the design criteria to determine their success.</p>	<p>techniques to prepare and cook a selection of the recipes, using skills gained in previous projects such as the Y3 project Cook Well, Eat Well. They use what they have learned to plan and make a nutritious seasonal soup, evaluating their product for taste, appearance and nutritional value.</p>	<p>sustainable architecture. They explore Greek architecture in more detail, identifying typical materials and features, such as columns pediments and friezes. Children use computer-aided design to develop their ideas.</p> <p>Children revisit and build on techniques from previous projects, such as the Y3 project Greenhouse, for adding strength, stability and support to structures. They use these skills and knowledge to design and build an impressive and functional model of a building.</p>	<p>taste and evaluate their dishes, modifying them if needed.</p>		<p>blanket stitches, then use their skills to repair an item of clothing. To conclude the project, children complete a sewing challenge to create something new from recycled fabrics.</p>
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## Subject Leader planning – Design & Technology



KS1 – Autumn - Cycle A

### Prior Learning:

- Creating Pizzas and following a recipe
- Labelling designs
- Basic seasonal food
- Exploring construction kits

	Learning Objective	Skills	Knowledge
Lesson 1 Investigating Shelters	<b>To explore and evaluate a range of shelters.</b>  <b>NC – Explore and evaluate a range of existing products.</b>	<p>Describe the similarities and differences between two products.</p> <p>Name and explore a range of everyday products and describe how they are used.</p>	<p>Two products can be compared by looking at a set of criteria and scoring both products against each one.</p> <p>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.</p> <p>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,</p>

			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.
Lesson 2 Properties of Materials	<p><b>To name a range of objects and the material they are made from.</b></p> <p><b>NC – Explore and evaluate a range of existing products.</b></p> <p><b>NC (Science) – Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.</b></p>	Identify and name what an object is made from, including wood, plastic, glass, metal, water and rock.	A material is what an object is made from. Everyday materials include wood, plastic, glass, metal, water, rock, brick, paper and fabric.
Lesson 3 Designing Shelters	<p><b>To design a functional shelter based on design criteria.</b></p> <p><b>NC – Design purposeful, functional, appealing products for themselves and other users based on design criteria.</b></p>	Create a design to meet simple design criteria.	Design criteria are the explicit goals that a project must achieve.
Lesson 4 Building Prototype Shelters	<p><b>To build a shelter and say how you can improve it.</b></p> <p><b>NC – Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</b></p> <p><b>Build structures, exploring how they can be made stronger, stiffer and more stable.</b></p>	<p>Construct simple structures, models or other products using a range of materials.</p> <p>Select and use a range of materials, beginning to explain their choices.</p>	<p>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.</p> <p>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.</p> <p>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.</p>

<p>Lesson 5 Designing a play den</p>	<p><b>To design a functional play den based on design criteria.</b></p> <p><b>NC - Design purposeful, functional, appealing products for themselves and other users based on design criteria.</b></p> <p><b>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</b></p> <p><b>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</b></p>	<p>Create a design to meet simple design criteria.</p> <p>Select and use a range of materials, beginning to explain their choices.</p>	<p>Design criteria are the explicit goals that a project must achieve.</p> <p>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.</p> <p>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.</p>
<p>Lesson 6 Evaluation</p>	<p><b>To evaluate your shelter and play den against the design criteria.</b></p> <p><b>NC - Evaluate their ideas and products against design criteria.</b></p>	<p>Talk about their own and each other's work, identifying strengths or weaknesses and offering support.</p>	<p>A strength is a good quality of a piece of work. A weakness is an area that could be improved.</p>





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## Subject Leader planning – Design & Technology



KS1 – Spring - Cycle A

Taxi!	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Investigating wheels, axles and chassis	<b>To explore and evaluate a range of items that have wheels on.</b>  NC - Explore and evaluate a range of existing products.	Name and explore a range of everyday products and describe how they are used.	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.  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.
Lesson 2 – Develop Experimenting	<b>To make a model using simple mechanisms.</b>  NC - Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products.	Use wheels and axles to make a simple moving model.	An axle is a rod or spindle that passes through the centre of a wheel to connect two wheels.  Most vehicles that move on land have axles and wheels that are fixed to a chassis.
Lesson 3 - Develop Exploring axles	<b>To explore and evaluate the differences and similarities between two axles.</b>  NC - Explore and evaluate a range of existing products.	Describe the similarities and differences between two products.	Two products can be compared by looking at a set of criteria and scoring both products against each one.  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.
Lesson 4 - Innovate Designing our taxis	<b>To design a functional taxis based on a design criteria.</b>	Create a design to meet simple design criteria.	Design criteria are the explicit goals that a project must achieve.

	<p><b>NC - Design purposeful, functional, appealing products for themselves and other users based on design criteria.</b></p> <p><b>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</b></p>		
<p>Lesson 5 – Innovate Making our taxis</p>	<p><b>To make a taxis using a range of materials and simple mechanisms.</b></p> <p><b>NC - Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products.</b></p>	<p>Use wheels and axles to make a simple moving model.</p>	<p>An axle is a rod or spindle that passes through the centre of a wheel to connect two wheels.</p>
<p>Lesson 6 – Express Evaluating our taxis</p>	<p><b>To evaluate your taxis against your design criteria.</b></p> <p><b>NC - Evaluate their ideas and products against design criteria.</b></p>	<p>Talk about their own and each other's work, identifying strengths or weaknesses and offering support.</p>	<p>A strength is a good quality of a piece of work. A weakness is an area that could be improved.</p>

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## Subject Leader planning – Design & Technology



KS1 – Summer - Cycle A

Chop, Slice and Mash	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Investigating sources of food	<b>To understand where food comes from.</b>  NC - Understand where food comes from.		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.
Lesson 2 - Develop Preparing fruits and vegetables	<b>To select the correct tool in order to prepare some fruit and vegetables.</b>  NC - Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing).	Select the appropriate tool for a simple practical task.  Explain why hand washing and cleanliness are important.	Specific tools are used for particular purposes. For example, scissors are used for cutting and glue is used for sticking.  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.  Hand washing and good hygiene are important parts of a healthy lifestyle and prevent the spread of germs.
Lesson 3 – Develop Exploring Salads	<b>To use the basic principles of a healthy diet when cooking.</b>  NC - Use the basic principles of a healthy and varied diet to prepare dishes.	Measure and weigh food items using non-standard measures, such as spoons and cups.	Using non-standard measures is a way of measuring that does not involve reading scales. For example, weight may be measured using a balance scale and lumps of plasticine. Length may be measured in the number of handspans or pencils laid end to end.

<p>Lesson 4 - Innovate Designing a supermarket sandwich</p>	<p><b>To design a sandwich which meets the design criteria.</b></p> <p><b>NC - Design purposeful, functional, appealing products for themselves and other users based on design criteria.</b></p> <p><b>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</b></p> <p><b>Explore and evaluate a range of existing products.</b></p> <p><b>Use the basic principles of a healthy and varied diet to prepare dishes.</b></p>	<p>Create a design to meet simple design criteria.</p> <p>Describe why a product is important.</p>	<p>Design criteria are the explicit goals that a project must achieve.</p> <p>The importance of a product may be that it fulfils its goals and performs a useful purpose.</p>
<p>Lesson 5 – Innovate Making a supermarket sandwich</p>	<p><b>To make and understand how to make a sandwich safely.</b></p> <p><b>NC – Use the basic principles of a healthy and varied diet to prepare dishes.</b></p> <p><b>Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing).</b></p>	<p>Follow the rules to keep safe during a practical task.</p>	<p>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.</p>
<p>Lesson 6 – Express Evaluation</p>	<p><b>To evaluate your sandwich, identifying any strengths or weaknesses.</b></p>	<p>Talk about their own and each other's work, identifying strengths or weaknesses and offering support.</p>	<p>A strength is a good quality of a piece of work. A weakness is an area that could be improved.</p>

	<b>NC - Evaluate their ideas and products against design criteria.</b>		
<b>Links to other subjects</b>	<b>Science:</b> To be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.	Explain why hand washing and cleanliness are important.	Hand washing and good hygiene are important parts of a healthy lifestyle and prevent the spread of germs.
<b>Links to other subjects</b>	<b>RHE:</b>  To know about personal hygiene and germs including bacteria, viruses, how they are spread and treated, and the importance of handwashing.  To know what constitutes a healthy diet (including understanding calories and other nutritional content).	Explain why hand washing and cleanliness are important.  Select healthy ingredients for a fruit or vegetable salad	Hand washing and good hygiene are important parts of a healthy lifestyle and prevent the spread of germs.  Fruits and vegetables can be mixed to make a healthy salad. Salad dressings can improve the flavour of salads.  Fruit and vegetables are an important part of a healthy diet. It is recommended that people eat at least five portions of fruit and vegetables every day.

**Gaps:**

- Lack of materials during COVID to construct anything at home linked to curriculum but other home projects completed
- Evaluating peer work.
- Specific vocabulary e.g. axis etc

**Key vocabulary:**

**Evaluation** – criteria, change, improve, weakness, success

**Generation of ideas** – design, drawing, frame, material, purpose, size, shape, idea, diagram, label

**Compare and contrast** – compare, different, similar, similarity

**Staying safe** – safety, tool, hygiene, rule

**Everyday products** – function, permanent, protection, shelter, structure, temporary, axle, chassis, vehicle, wheel

**Structures** – appearance, construction, design, entry point, model, roof, safety, wall, tools, test

**Investigation** – attach, strong, weak, evaluate, chop, grate, knife, mash, peeler, slice, tear

**Materials for purpose** – brick, construction, fabric, rope, tarpaulin, wooden cane, material, purpose

**Mechanisms and movement** – axle, chassis, connect, move, roll, wheel

**Significant people** – product, taxi, transport, vehicle

**Cutting and joining textiles** – join, running stitch, stitch

**Decorating and embellishing textiles** – bead, button, glue, sequin, stitch

**Nutrition** – flavour, fruit, healthy, ingredient, salad, vegetable

**Origins of food** – animal, dairy product, fish, leaf, nut, fruit, source, stem, seed, plant, flower

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## Subject Leader planning – Design & Technology



KS1 – Autumn - Cycle B

Remarkable Recipes	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Exploring where food comes from	<p><b>To understand where food comes from.</b></p> <p><b>NC - Understand where food comes from.</b></p>	<p>Identify the origin of some common foods (milk, eggs, some meats, common fruit and vegetables).</p>	<p>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.</p>
Lesson 2 - Develop Tools	<p><b>To select the correct tool in order to prepare some food.</b></p> <p><b>NC - Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing).</b></p> <p><b>Use the basic principles of a healthy and varied diet to prepare dishes.</b></p>	<p>Select the appropriate tool for a task and explain their choice.</p> <p>Prepare ingredients by peeling, grating, chopping and slicing.</p>	<p>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.</p> <p>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,</p>



			such as onions and peppers and slicing foods, such as bread and apples.
Lesson 3 – Develop Why do we cook our food?	<p><b>To understand what happens to food when you heat it up and cool it down.</b></p> <p>NC – Select from and use a range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing).</p>	Observe what happens when a range of everyday materials, including foods, are heated and cooled, sorting and grouping them based on their observations.	Some foods, such as ice and chocolate, melt when heated, but then harden (solidify or freeze) when cooled.
Lesson 4 - Develop Reading recipes	<p><b>To read a recipe and communicate the instructions to your team.</b></p> <p>NC - Design purposeful, functional, appealing products for themselves and other users based on design criteria.</p> <p>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p>	<p>Generate and communicate their ideas through a range of different methods.</p> <p>Work safely and hygienically in construction and cooking activities.</p>	<p>Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology.</p> <p>Hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriately and wiping up spills.</p>
Lesson 5 – Innovate Planning a school meal	<p><b>To evaluate two recipes and record which one is best.</b></p> <p>NC - Design purposeful, functional, appealing products for themselves and other users based on design criteria.</p>	<p>Generate and communicate their ideas through a range of different methods.</p> <p>Explain why a designer or inventor is important.</p>	<p>Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology.</p> <p>Many key individuals have helped to shape the world. These include engineers, scientists, designers, inventors and many other people in important roles.</p>

	<p><b>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</b></p> <p><b>Explore and evaluate a range of existing products.</b></p> <p><b>Use the basic principles of a healthy and varied diet to prepare dishes.</b></p>		School kitchen staff are important people because they provide healthy, nutritious, appealing and balanced meals.
Lesson 6 – Innovate Making a new school meal	<p><b>To understand how to plan and prepare a healthy meal.</b></p> <p><b>NC - Use the basic principles of a healthy and varied diet to prepare dishes.</b></p>	Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal.	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.
Lesson 7 –Express Evaluation	<p><b>To evaluate the new menu against the design criteria.</b></p> <p><b>NC - Evaluate their ideas and products against design criteria.</b></p>	Explain how closely their finished products meet their design criteria and say what they could do better in the future.	Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned.
<b>Links to other subjects</b>	<p><b>Science:</b></p> <p>To 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.</p>	Observe what happens when a range of everyday materials, including foods, are heated and cooled, sorting and grouping them based on their observations.	Some foods, such as ice and chocolate, melt when heated, but then harden (solidify or freeze) when cooled.
<b>Links to other subjects</b>	<p><b>RHE:</b></p> <p>To know about personal hygiene and germs including bacteria, viruses, how they are spread and treated, and the importance of handwashing.</p>	Work safely and hygienically in construction and cooking activities.	Hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriately and wiping up spills.

	<p>To know what constitutes a healthy diet (including understanding calories and other nutritional content).</p> <p>To know the principles of planning and preparing a range of healthy meals.</p>	Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal.	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.
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## Subject Leader planning – Design & Technology



KS1 – Spring - Cycle B

Beach Hut	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Investigating beach huts	<p><b>To see what materials would make a good beach hut.</b></p> <p><b>NC - Design purposeful, functional, appealing products for themselves and other users based on design criteria.</b></p> <p><b>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</b></p>	Generate and communicate their ideas through a range of different methods.	Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology.

Lesson 2 - Develop Experimenting	<p><b>To create a functional beach hut and say how you can improve it.</b></p> <p><b>NC - Build structures, exploring how they can be made stronger, stiffer and more stable.</b></p>	Explore how a structure can be made stronger, stiffer and more stable.	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.
Lesson 3 – Develop Working with wood	<p><b>To create a wooden frame and evaluate how strong it is.</b></p> <p><b>NC - Build structures, exploring how they can be made stronger, stiffer and more stable.</b></p>	Explore how a structure can be made stronger, stiffer and more stable.	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..
Lesson 4 - Innovate Designing our huts	<p><b>To design a functional beach hut.</b></p> <p><b>NC - Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</b></p>	Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.	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.
Lesson 5 – Innovate Making our huts	<p><b>To use the correct tools to create a wooden beach hut.</b></p> <p><b>NC - Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing).</b></p>	Select the appropriate tool for a task and explain their choice.	<p>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.</p> <p>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.</p>
Lesson 6 – Express Evaluating out beach huts	<p><b>To evaluate your beach hut against the design criteria.</b></p> <p><b>NC - Evaluate their ideas and products against design criteria.</b></p>	Explain how closely their finished products meet their design criteria and say what they could do better in the future.	Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned.

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## Subject Leader planning – Design & Technology



KS1 – Summer - Cycle B

Cut, Stitch and Join	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Everyday fabric products	<p><b>To explore and evaluate a range of fabric products.</b></p> <p>NC - Explore and evaluate a range of existing products.</p>	Explain how an everyday product could be improved.	<p>Products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive.</p> <p>There are many fabric home products. These include bedding, tea towels, cushions, tea cosies, toiletry bags and other containers.</p>
Lesson 2 - Engage Significant designer – Cath Kidston	<p><b>To explore and evaluate a range of Cath Kidston's products.</b></p> <p>NC - Explore and evaluate a range of existing products.</p>	<p>Compare different or the same products from the same or different brands.</p> <p>Explain why a designer or inventor is important.</p>	<p>Products can be compared by looking at particular characteristics of each and deciding which is better suited to the purpose.</p> <p>Many key individuals have helped to shape the world. These include engineers, scientists, designers, inventors and many other people in important roles.</p> <p>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.</p>
Lesson 3 – Develop Sewing patterns	<p><b>To select and use the correct tools to create a simple pattern.</b></p> <p>NC - Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing).</p>	Select the appropriate tool for a task and explain their choice.	<p>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.</p> <p>A sewing pattern is a template of the parts needed to make a garment or product. Pattern pieces are usually made from paper.</p>

Lesson 4 - Develop Stitching	<p><b>To select and use the correct tools to practice your sewing skills.</b></p> <p>NC - Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing).</p>	Use different methods of joining fabrics, including glue and running stitch.	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.
Lesson 5 – Develop Embellishment	<p><b>To select and use a range of materials to create practice embellishment methods.</b></p> <p>NC - Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</p>	Add simple decorative embellishments, such as buttons, prints, sequins and appliqué.	Embellishment is a decorative detail or feature added to something to make it more attractive.
Lesson 6 – Innovate Designing a bag tag	<p><b>To design a purposeful bag tag based on the design criteria.</b></p> <p>NC - Design purposeful, functional, appealing products for themselves and other users based on design criteria.</p> <p>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p>	Generate and communicate their ideas through a range of different methods.	Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology.
Lesson 7 –Innovate Making a bag tag	<p><b>To select and use a range of materials and skills to make a bag tag.</b></p>	Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.	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.

	<b>NC - Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</b>		
Lesson 8 – Express Evaluation	<b>To evaluate your bag tag against the design criteria.</b>  <b>NC - To evaluate their ideas and products against design criteria.</b>	Explain how closely their finished products meet their design criteria and say what they could do better in the future.	Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned.
<b><u>Summer Topic 2 – Push and Pull</u></b>			
Lesson 1 – Engage Machines and mechanisms	<b>To explore and understand what a mechanism is.</b>  <b>NC - Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products.</b>	Use a range of mechanisms (levers, sliders, wheels and axles) in models or products.	<p>A mechanism is a device that takes one type of motion or force and produces a different one. A mechanism makes a job easier to do. Mechanisms include sliders, levers, linkages, gears, pulleys and cams.</p> <p>People build machines to make their work easier. A machine is made up of different parts that all work together to perform a task. Individual parts of a machine are called components. The part that brings about movement is called the mechanism.</p>
Lesson 2 – Develop Slider mechanism	<b>To understand what a slider mechanism is and how it works.</b>  <b>NC - Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products.</b>	<p>Use a range of mechanisms (levers, sliders, wheels and axles) in models or products.</p> <p>Make models with moving parts.</p>	<p>A mechanism is a device that takes one type of motion or force and produces a different one. A mechanism makes a job easier to do. Mechanisms include sliders, levers, linkages, gears, pulleys and cams.</p> <p>Models can have moving parts that use levers, sliders, wheels and axles.</p> <p>A slider mechanism moves in a straight line. This can be up and down or from side to side. It is made up of</p>

			<p>a slider and slider support to direct the movement. Real-life examples of slider mechanisms include door bolts and drawers.</p>
<p>Lesson 3 – Develop Lever mechanism</p>	<p><b>To understand what a slider lever is and how it works.</b></p> <p><b>NC - Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products.</b></p>	<p>Use a range of mechanisms (levers, sliders, wheels and axles) in models or products.</p> <p>Make models with moving parts.</p>	<p>A mechanism is a device that takes one type of motion or force and produces a different one. A mechanism makes a job easier to do. Mechanisms include sliders, levers, linkages, gears, pulleys and cams.</p> <p>Models can have moving parts that use levers, sliders, wheels and axles.</p> <p>A lever mechanism is a bar that moves around a fixed point called a pivot. The amount of movement depends on the position of the pivot. Levers move an object in an arc shape. Real-life uses of levers include scissors and seesaws.</p>
<p>Lesson 4 – Develop Linkage mechanism</p>	<p><b>To understand what a linkage mechanism is and how it works.</b></p> <p><b>NC - Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products.</b></p>	<p>Use a range of mechanisms (levers, sliders, wheels and axles) in models or products.</p> <p>Make models with moving parts.</p>	<p>A mechanism is a device that takes one type of motion or force and produces a different one. A mechanism makes a job easier to do. Mechanisms include sliders, levers, linkages, gears, pulleys and cams.</p> <p>Models can have moving parts that use levers, sliders, wheels and axles.</p> <p>A linkage mechanism combines levers and sliders. It consists of two or more bars joined together by pivots. Fixed pivots attach the linkage mechanism to a fixed base to keep the joint still. Moving pivots join two bars together, but the bars can still move freely. Real-life uses of linkages include toolboxes and scissor lifts.</p>
<p>Lesson 5 – Innovate Designing a moving greetings card</p>	<p><b>To evaluate and compare a range of greetings cards.</b></p> <p><b>NC - Explore and evaluate a range of existing products.</b></p>	<p>Explain how an everyday product could be improved.</p>	<p>Products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive.</p>



Lesson 6 – Innovate Making a moving greetings card.	<p><b>To select and use a range of materials to create a moving greetings card.</b></p> <p><b>NC - Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</b></p>	Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.	<p>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.</p> <p>Moving mechanisms are made using stiff materials, such as card, plastic or metal, so as not to bend or break when force is applied. Materials should be cut, joined and finished carefully and appropriately to make sure the product works, looks appealing and achieves the design criteria.</p>
Lesson 7 – Express Evaluation	<p><b>To evaluate your greetings card against the design criteria.</b></p> <p><b>NC - Evaluate their ideas and products against design criteria.</b></p>	Explain how closely their finished products meet their design criteria and say what they could do better in the future.	Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned.
<b>Links with other subjects</b>	<p><b>Science:</b> Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.</p>	Use a range of mechanisms (levers, sliders, wheels and axles) in models or products.	<p>Models can have moving parts that use levers, sliders, wheels and axles.</p> <p>A slider mechanism moves in a straight line. This can be up and down or from side to side. It is made up of a slider and slider support to direct the movement. Real-life examples of slider mechanisms include door bolts and drawers.</p>

**Key vocabulary:**

**Evaluation** – change, dislike, improve, evaluation, success, weakness, design criteria, finish, product

**Generation of ideas** – design, drawing, equipment, test, recipe, test, label, picture, describe, diagram, bag tag, design, explore, plan, sketch

**Staying safe** – safety, tool, equipment

**Structures** – construct, frame, joint, stuff, stable strengthen, structure

**Investigation** – fork, grate, grater, grip, measure, measuring spoon, peel, mix, slice, spread, tool, tongs, finish, support, sewing pattern, stapler, test

**Materials for purpose** – material, property, use, decorative, embellishment, fabric, textile, card, plastic, stiff

**Nutrition** – ingredient, measure, preparation

**Origins of food** – animal, dairy product, fish, leaf, nut, fruit, source, stem, seed, plant, flower, vegan, vegetarian, shellfish

**Compare and contrast** – compare, design, different, motif, spots, same, stripes, different, similar

**Everyday products** – attractive, cushion, hardwearing, improve, peg bag, pillowcase, tea cosy, toiletry bag, product, greetings card

**Significant people** – Cath Kidston, brand, distinctive, fashion, homeware designer, inspire, textile, vintage

**Cutting and joining textiles** – cut, fabric, glue, join, running stitch, sew

**Decorating and embellishing textiles** – applique, button, decorative, embellishment, fabric, printing, sequin, textile

**Mechanisms and movement** – bar, component, fixed pivot, force, linkage, machine, mechanism, motion, movement, pull, push, slider

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## Subject Leader planning – Design & Technology



LKS2 – Autumn - Cycle A

### Prior Learning:

- Appropriate materials to use for different purposes.
- Beginning to evaluate children's work
- Preparing healthy food
- Designing a product based on a description

Cook well, eat well	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Healthy balance diets	<b>To understand what a healthy balanced diet is.</b>  <b>NC - Understand and apply the principles of a healthy and varied diet.</b>  <b>Understand how key events and individuals in design and technology have helped shape the world.</b>	Identify the main food groups (carbohydrates, protein, dairy, fruits and vegetables, fats and sugars).  Describe how key events in design and technology have shaped the world.  Explain the importance and characteristics of a healthy, balanced diet.	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.  Key inventions in design and technology have changed the way people live.

			<p>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.</p>
<p>Lesson 2 - Develop Using cooking appliances</p>	<p><b>To use cooking appliances to cook a meal.</b></p> <p><b>NC - Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.</b></p>	<p>Use appliances safely with adult supervision.</p> <p>Prepare and cook a simple savoury dish.</p>	<p>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.</p> <p>Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning.</p>
<p>Lesson 3 – Develop Making a ratatouille</p>	<p><b>To prepare and cook a meal using a range of cooking techniques.</b></p> <p><b>NC - Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.</b></p>	<p>Prepare and cook a simple savoury dish.</p>	<p>Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning.</p> <p>Slow cookers cook food on a low heat over several hours.</p>
<p>Lesson 4 – Innovate Planning a taco filling</p>	<p><b>To research, design and plan your own taco filling.</b></p> <p><b>NC - 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.</b></p> <p><b>Generate, develop, model and communicate their ideas through</b></p>	<p>Develop design criteria to inform a design.</p> <p>Identify and name foods that are produced in different places.</p>	<p>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.</p> <p>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.</p>

	<p>discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p>		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.
Lesson 5 – Innovate Making a taco filling	<p>To make your taco filling using a range of cooking techniques.</p> <p>NC - Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.</p>	Prepare and cook a simple savoury dish.	Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning.
Lesson 6 –Express Evaluation	<p>To evaluate your taco filling against the design criteria and the views of others.</p> <p>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p>	Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.	Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model.
Links to other subjects	<p><b>Science:</b> To 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.</p>	Identify the main food groups (carbohydrates, protein, dairy, fruits and vegetables, fats and sugars).	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.
Links to other subjects	<p><b>RHE:</b> Know what constitutes a healthy diet (including understanding calories and other nutritional content).</p>	Explain the importance and characteristics of a healthy, balanced diet.	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.
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## Subject Leader planning – Design & Technology



LKS2 – Spring - Cycle A

Making it move	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Machines and mechanisms	<p><b>To investigate and analyse a range of machines and mechanisms.</b></p> <p>NC - Investigate and analyse a range of existing products.</p> <p>Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).</p>	<p>Explain how an existing product benefits the user.</p> <p>Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products.</p>	<p>Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box.</p> <p>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.</p>
Lesson 2 - Develop How cams work	<p><b>To understand how cams work.</b></p> <p>NC - Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.</p> <p>Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).</p>	<p>Use tools safely for cutting and joining materials and components.</p> <p>Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products.</p>	<p>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.</p> <p>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.</p>

			<p>Cams are devices that can convert circular motion into up-and-down motion.</p> <p>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.</p>
<p>Lesson 3 – Develop Using different shaped cams</p>	<p><b>To understand the difference between different shaped cams.</b></p> <p><b>NC - Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).</b></p>	<p>Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products.</p>	<p>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.</p> <p>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.</p>
<p>Lesson 4 – Innovate Designing an automaton toy</p>	<p><b>To research, design and plan an automaton toy.</b></p> <p><b>NC - 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.</b></p>	<p>Develop design criteria to inform a design.</p> <p>Plan which materials will be needed for a task and explain why.</p>	<p>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.</p> <p>Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost.</p>



	<p><b>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</b></p> <p><b>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.</b></p>		<p>Automata are machines that seem to move on their own and are intended to intrigue and delight an audience.</p>
<p>Lesson 5 – Innovate Making an automaton toy</p>	<p><b>To select and use a range of materials and equipment to make an automaton toy.</b></p> <p><b>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</b></p> <p><b>Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.</b></p>	<p>Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.</p> <p>Use tools safely for cutting and joining materials and components.</p>	<p>Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model.</p> <p>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.</p>
<p>Lesson 6 –Express Evaluation</p>	<p><b>To evaluate their automaton toy against the design criteria and the views of other people.</b></p> <p><b>NC - Evaluate their ideas and products against their own design</b></p>	<p>Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.</p>	<p>Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model.</p>

	criteria and consider the views of others to improve their work.		
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## Subject Leader planning – Design & Technology



LKS2 – Summer - Cycle A

Greenhouse Project to be completed over the term.	Learning Objective	Skills	Knowledge
Lesson 1 – Research	<p><b>To investigate, explore and analyse existing greenhouses.</b></p> <p><b>NC - Investigate and analyse a range of existing products.</b></p> <p><b>Understand how key events and individuals in design and technology have helped shape the world.</b></p>	<p>Explain the similarities and difference between the work of two designers.</p> <p>Explain how an existing product benefits the user.</p>	<p>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.</p> <p>Work from different designers can be compared by assessing specific criteria, such as their visual impact, fitness for purpose and target market.</p>
Lesson 2 - Design	<p><b>To research, plan and design a purposeful greenhouse.</b></p> <p><b>NC - 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.</b></p> <p><b>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded</b></p>	<p>Develop design criteria to inform a design.</p> <p>Plan which materials will be needed for a task and explain why.</p>	<p>Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box.</p> <p>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.</p> <p>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.</p>

	<p>diagrams, prototypes, pattern pieces and computer-aided design.</p>		
<p>Lesson 3 – Test materials / Improve design</p>	<p><b>To test various materials and evaluate their design.</b></p> <p>NC - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</p> <p>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p> <p>Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.</p>	<p>Develop design criteria to inform a design.</p> <p>Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.</p> <p>Use tools safely for cutting and joining materials and components.</p> <p>Plan which materials will be needed for a task and explain why.</p>	<p>Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box.</p> <p>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.</p> <p>Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model.</p> <p>Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost.</p> <p>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.</p>
<p>Lesson 4 – Build the greenhouse</p>	<p><b>To select and use a range of materials and tools to build a greenhouse.</b></p> <p>NC - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded</p>	<p>Create shell or frame structures using diagonal struts to strengthen them.</p> <p>Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.</p>	<p>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.</p> <p>Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box.</p>

	<p><b>diagrams, prototypes, pattern pieces and computer-aided design.</b></p> <p><b>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</b></p> <p><b>Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.</b></p> <p><b>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.</b></p>	<p>Use tools safely for cutting and joining materials and components.</p> <p>Plan which materials will be needed for a task and explain why.</p>	<p>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.</p> <p>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.</p> <p>Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost.</p>
Lesson 5 - Evaluate	<p><b>To evaluate the greenhouse against the design criteria and the views of others.</b></p> <p><b>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</b></p>	<p>Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.</p>	<p>Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model.</p>
<b>Links to other subjects</b>	<p><b>Science:</b></p> <p>To explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.</p>	<p>Describe the requirements of plants for life and growth (air, light, water, nutrients and room to grow) and how they vary from plant to plant.</p>	<p>Plants need air, light, water, minerals from the soil and room to grow, in order to survive. Different plants have different needs depending on their habitat. Examples include cacti, which need less water than is typical, and ferns, which can grow in lower light levels.</p>

**Gaps:**

- Fine motor skills when preparing food

- Range of famous designers and their contribution to society
- Woodwork skills

**Key vocabulary:**

**Evaluation** – evaluate, improve, success, demonstrate, discussion, evaluate, feedback, finish, improvement, reflect, structure, change, findings, improvement, observation, suitability

**Generation of ideas** – design, drawing, diagram, health and safety, dimension, plan

**Food preparation and cooking** – bake, barbecue, boil, chop, cook, fry, hob, method, mix, peel, roast, steam

**Nutrition** – Eatwell guide, balanced, calcium, carbohydrate, dairy, fruit, oil, protein, vitamin, food group, fibre

**Significant people** – Food Standards Agency

**Cutting and joining textiles** – cloth, fabric, interlace, loom, thread, weft, yarn, woven, warp, weaving

**Decorating and embellishing textiles** – pattern, grass, twig, grass, embellish, decorate, fruit, leaf

**Investigation** – component, cut, material, test, G clamp, bench hook, butt join, hacksaw, gluing, reinforcing, strengthening, test

**Mechanisms and movement** – automaton toy, axle, cam, component, down, heart cam, off-centre circular cam, pear cam, rotational, snail cam, square cam, wheel

**Compare and contrast** – biome, compare, conservatory, designer, difference, purpose, similarly, structure, style

**Staying Safe** – Safety rules, supervision

**Everyday products** – cloche, cold frame, greenhouse

**Structures** – diagonal strut, three-dimensional, triangular square, stability, strength, frame structure

**Materials for purpose** – glass, hardwearing, material, plastic, property, purpose, strength, transparent, waterproof

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## Subject Leader planning – Design & Technology



LKS2 – Autumn - Cycle B

Fresh Food, Good Food	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Keeping food fresh	<p><b>To understand why food decays and what we can do to stop it.</b></p> <p>NC - Understand how key events and individuals in design and technology have helped shape the world.</p>	<p>Explain how and why a significant designer or inventor shaped the world.</p>	<p>Significant designers and inventors can shape the world.</p> <p>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.</p>
Lesson 2 - Develop Food packaging	<p><b>To investigate and analyse the design aspect of food packaging.</b></p> <p>NC - Investigate and analyse a range of existing products.</p> <p>Understand how key events and individuals in design and technology have helped shape the world.</p> <p>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p>	<p>Investigate and identify the design features of a familiar product.</p> <p>Explain how and why a significant designer or inventor shaped the world.</p> <p>Identify and name foods that are produced in different places in the UK and beyond.</p>	<p>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.</p> <p>Significant designers and inventors can shape the world.</p> <p>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.</p>
Lesson 3 – Develop Diagrams and prototypes	<p><b>To create and then evaluate their own food packaging.</b></p>	<p>Prototype shell and frame structures, showing awareness of how to strengthen, stiffen and reinforce them.</p>	<p>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</p>

	<p><b>NC - Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</b></p> <p><b>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.</b></p> <p><b>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</b></p>	<p>Use annotated sketches and exploded diagrams to test and communicate their ideas.</p>	<p>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).</p> <p>Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way.</p> <p>Most cardboard packaging is produced from a net. Packages can be strengthened by using thicker cardboard or multiple layers.</p>
Lesson 4 – Develop Fresh, healthy snacks	<p><b>To understand what a healthy varied diet includes.</b></p> <p><b>NC - Understand and apply the principles of a healthy and varied diet.</b></p> <p><b>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.</b></p>	<p>Design a healthy snack or packed lunch and explain why it is healthy.</p> <p>Identify and use a range of cooking techniques to prepare a simple meal or snack.</p>	<p>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.</p> <p>Cooking techniques include baking, boiling, frying, grilling and roasting.</p>
Lesson 5 – Innovate Designing a healthy packaged snack	<p><b>To understand all the elements needed to create a healthy packed snack.</b></p>	<p>Choose from a range of materials, showing an understanding of their different characteristics.</p>	<p>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</p>



	<p><b>NC - 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.</b></p> <p><b>Understand and apply the principles of a healthy and varied diet.</b></p>	<p>Design a healthy snack or packed lunch and explain why it is healthy.</p>	<p>tastes and appearances. They look and taste better and are cheaper when in season.</p> <p>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.</p> <p>Foods need packaging to keep them fresh, safe to eat and free from damage. Food packaging also provides nutritional information about the food inside, 'use by' and 'best before' dates, and the materials and recyclability of the packaging.</p>
<p>Lesson 6 –Innovate Making a healthy packaged snack</p>	<p><b>To select the correct foods, equipment and materials to create a healthy packed snack.</b></p> <p><b>NC - Understand and apply the principles of a healthy and varied diet.</b></p>	<p>Work safely with everyday chemical products under supervision, such as disinfectant hand wash and surface cleaning spray.</p> <p>Design a healthy snack or packed lunch and explain why it is healthy.</p>	<p>Chemicals are used in the home every day. They include cleaning products, such as bleach and disinfectant, but also paints, glues, oils, pesticides and medicines. Most chemical products carry a hazard symbol showing in what way the chemical could be harmful. Chemicals should only be used under adult supervision. Appropriate safety precautions, such as wearing goggles and gloves, working in a well-ventilated room, wiping up spills and tying back long hair, should be taken.</p> <p>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.</p>

Lesson 7 – Express Evaluation	<p><b>To evaluate their healthy snack against their own design criteria and consider the views of others.</b></p> <p><b>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</b></p>	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.	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.
<b>Links to other subjects</b>	<p><b>RHE:</b></p> <p>To know what constitutes a healthy diet (including understanding calories and other nutritional content).</p> <p>To know the principles of planning and preparing a range of healthy meals.</p>	Design a healthy snack or packed lunch and explain why it is healthy.	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.

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## Subject Leader planning – Design & Technology



LKS2 – Spring - Cycle B

Functional and Fancy Fabrics	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Exploring fabrics	<p><b>To investigate and analyse a range of products made from fabric.</b></p> <p>NC - Investigate and analyse a range of existing products.</p> <p>Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.</p>	<p>Create and complete a comparison table to compare two or more products.</p> <p>Choose from a range of materials, showing an understanding of their different characteristics.</p>	<p>A comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored.</p> <p>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.</p> <p>Fabrics can be natural or synthetic. Natural fabrics include cotton, silk and wool. Synthetic fabrics include Lycra, polyester and nylon.</p>
Lesson 2 - Develop Design features of familiar products	<p><b>To understand the difference between two different products.</b></p> <p>NC - Investigate and analyse a range of existing products.</p>	<p>Investigate and identify the design features of a familiar product.</p> <p>Create and complete a comparison table to compare two or more products.</p>	<p>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.</p> <p>A comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored.</p> <p>Design features include purpose and function, appearance, quality, material, size, colour, pattern, embellishment, durability and usability.</p>

Lesson 3 – Develop Significant design – William Morris	<p><b>To understand who William Morris is and what role he had in shaping the world.</b></p> <p><b>NC - Understand how key events and individuals in design and technology have helped shape the world.</b></p>	Explain how and why a significant designer or inventor shaped the world.	<p>Significant designers and inventors can shape the world.</p> <p>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.</p>
Lesson 4 – Develop William Morris' motifs	<p><b>To use a range of design and drawing techniques to draw a motif.</b></p> <p><b>NC – Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.</b></p>	Represent the detailed patterns found in natural phenomena, such as water, weather or animal skins.	<p>Natural patterns from weather, water or animals skins are often used as a subject matter.</p> <p>William Morris' motifs consisted mainly of leaves, flowers, fruits and birds.</p>
Lesson 5 – Develop Block printing	<p><b>To select and use the correct materials and equipment to create a decorative pattern.</b></p> <p><b>NC - 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.</b></p>	<p>Combine a variety of printmaking techniques and materials to create a print on a theme.</p> <p>Create detailed decorative patterns on fabric using printing techniques.</p>	<p>Different printmaking techniques include monoprinting, engraving, etching, screen printing and lithography.</p> <p>Block printing techniques and fabric paint are used to create decorative, repeated patterns on fabrics.</p>
Lesson 6 – Develop Sewing a hem	<p><b>To use the correct equipment to accurately sew a hem.</b></p> <p><b>NC - Select from and use a wider range of tools and equipment to perform practical tasks (for example,</b></p>	Hand sew a hem or seam using a running stitch.	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.

	cutting, shaping, joining and finishing), accurately.		
Lesson 7 – Develop Embroidered embellishment	<p>To use a range of design and art techniques to use embroidery stitches.</p> <p>NC - Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.</p> <p>Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.</p>	Use a range of stitches to add detail and texture to fabric or mixed-media collages.	<p>Stitches include running stitch, cross stitch and blanket stitch.</p> <p>Embroidery stitches, such as scatter stitches, satin stitch and back stitch, embellish fabric.</p>
Lesson 8 – Innovate Designing a William Morris – inspired fabric	<p>To research, design and plan an appealing William Morris inspired printed fabric.</p> <p>NC - 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.</p> <p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded</p>	Use annotated sketches and exploded diagrams to test and communicate their ideas.	<p>Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way.</p> <p>Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way.</p>

	<p>diagrams, prototypes, pattern pieces and computer-aided design.</p>		
<p>Lesson 9 – Innovate Making a William Morris – inspired fabric</p>	<p><b>To select and use a range of tools, equipment and materials to create a William Morris inspired printed fabric.</b></p> <p>NC - Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.</p>	<p>Select, name and use tools with adult supervision.</p>	<p>Useful tools for cutting include scissors, craft knives, junior hacksaws with pistol grip and bench hooks. Useful tools for joining include glue guns. Tools should only be used with adult supervision and safety rules must be followed.</p> <p>Joining tools to use with fabric include needles, pins and clips, cutting tools include a variety of scissors such as pinking shears, finishing tools include an iron and ironing board.</p>
<p>Lesson 10 – Express Evaluation</p>	<p><b>To evaluate their printed fabric against the design criteria and the views of others.</b></p> <p>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p>	<p>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.</p>	<p>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.</p>
<p><b>Links to other subjects</b></p>	<p><b>Art and design:</b></p> <p>To improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials (for example, pencil, charcoal, paint, clay).</p>	<p>Represent the detailed patterns found in natural phenomena, such as water, weather or animal skins.</p> <p>Use a range of stitches to add detail and texture to fabric or mixed-media collages.</p>	<p>Natural patterns from weather, water or animals skins are often used as a subject matter.</p> <p>William Morris' motifs consisted mainly of leaves, flowers, fruits and birds.</p> <p>Stitches include running stitch, cross stitch and blanket stitch.</p>

			Embroidery stitches, such as scatter stitches, satin stitch and back stitch, embellish fabric.
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## Subject Leader planning – Design & Technology



LKS2 – Summer - Cycle B

Tomb Builders	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Identifying simple machines	<p><b>To understand and identify different mechanical systems.</b></p> <p>NC - Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).</p>	Explore and use a range of mechanisms (levers, axles, cams, gears and pulleys) in models or products.	<p>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.</p> <p>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.</p>
Lesson 2 - Develop Using simple machines	<p><b>To understand the role of simple machines.</b></p> <p>NC - Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.</p>	Explore and use a range of mechanisms (levers, axles, cams, gears and pulleys) in models or products.	<p>.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.</p> <p>Simple machines make physical jobs easier by changing the strength or direction of a force.</p>



Lesson 3 – Develop Making simple machines	<p><b>To use a range of materials and tools to create your own simple machine.</b></p> <p><b>NC - Understand how key events and individuals in design and technology have helped shape the world.</b></p>	Choose from a range of materials, showing an understanding of their different characteristics. .	<p>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.</p> <p>Characteristics of materials, such as rigidity, strength and smoothness will affect the success of a working model.</p>
Lesson 4 – Innovate Designing machine prototypes	<p><b>To design and evaluate a simple machine to help the tomb builders move the stones.</b></p> <p><b>NC - Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).</b></p>	Explore and use a range of mechanisms (levers, axles, cams, gears and pulleys) in models or products.	<p>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.</p> <p>Simple machines including pulleys, levers, wheels and axles and inclined planes can be combined to make a machine that can move heavy objects.</p>
Lesson 5 – Express Evaluation	<p><b>To evaluate their prototype and design against the design criteria and the views of others.</b></p> <p><b>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</b></p>	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.	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.

**Key vocabulary:**

**Evaluation** – evaluation, fulfil design criteria, improve, success, appearance, attractive, purpose, review, finish, improvement, modification, change

**Generation of ideas** – build, deconstruct, net, reconstruct, sketch, annotate, plan, exploded diagram, prototype

**Everyday products** – Tetra Park, Tupperware, bag, bottle, box, cling film, compostable, recyclable, reuse, home furnishing, home product, nightlight, switch, sensor, compound machine, device, simple machine, nightlight, programmable

**Materials for purpose** – polystyrene, card, cardboard, cling film paper, plastic, tin foil, appearance, colour, synthetic, textile, yarn, textile, durable, fabric, property, soft, stretchy, tough, use, versatile, waterproof, lightweight, characteristic, smooth, rigid, strength

**Mechanisms and movement** – axle, compound machine, effort, first class, inclined plane, load, pulley, screw, simple machine, wedge, wheel

**Significant people** – Dr Ruben Rausing, Earl Tupper, Gerald Thomas, Henry D Thatcher, Jacob Perkins, Kruger Brewing Company, Louise Pasteur, Peter Durand, Ralph Wiley, William Morris, Morris & Co

**Compare and contrast** – appearance, colour, compare, different, function, quality, size, similar, pattern

**Use of ICT** – Coding, micro bit, program, programming

**Structures** – cone, cube, cuboid, hexagonal prism, net, packaging, prototype, triangular prism

**Food preparation and cooking** – bake, blender, chop, chopping board, cool, cut, crush, garlic press, knife, pastry brush, wash, spread, tear

**Nutrition** – fresh, healthy, snack

**Cutting and joining textiles** – fraying, hem, pinking shears, running stitch, sew

**Decorating and embellishing textiles** – block printing, diamond, pattern structure trellis, wey

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## Subject Leader planning – Design & Technology



UKS2 – Autumn - Cycle A

### Prior Learning:

- Different shaped object make different types of movements for different purposes.
- Build upon materials and structural learning to focus on strengthening structures
- .The purpose of packaging and aspects you need to consider when designing this.

Moving Mechanisms	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Exploring pneumatics	<b>To investigate and analyse a range of mechanical systems that include pneumatics.</b>  <b>NC - Investigate and analyse a range of existing products.</b>  <b>Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).</b>	Explain how the design of a product has been influenced by the culture or society in which it was designed or made.  Use mechanical systems in their products, such as pneumatics.	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.  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.

			<p>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.</p>
<p>Lesson 2 - Develop Investigating pneumatics</p>	<p><b>To design and create a pneumatic system.</b></p> <p><b>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</b></p> <p><b>Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).</b></p>	<p>Test and evaluate products against a detailed design specification and make adaptations as they develop the product.</p> <p>Use mechanical systems in their products, such as pneumatics.</p>	<p>Testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture.</p> <p>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.</p>
<p>Lesson 3 – Develop Making a pneumatic machine</p>	<p><b>To understand how to improve the pneumatic machine so it works well.</b></p> <p><b>NC - Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</b></p> <p><b>Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.</b></p>	<p>Build a framework using a range of materials to support mechanisms.</p> <p>Name and select increasingly appropriate tools for a task and use them safely.</p>	<p>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.</p> <p>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.</p> <p>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.</p>

<p>Lesson 4 – Innovate Designing a pneumatics prototype</p>	<p><b>To design, critique, evaluate and test your ideas and pneumatic prototype.</b></p> <p><b>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</b></p> <p><b>Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).</b></p> <p><b>Understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors).</b></p>	<p>Explain the functionality and purpose of safety features on a range of products.</p> <p>Use mechanical systems in their products, such as pneumatics.</p>	<p>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.</p> <p>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.</p> <p>Pneumatic systems can be used to lift heavy loads, raise and lower platforms or soften a force by acting as a shock absorber.</p>
<p>Lesson 5 – Innovate Making a pneumatic prototype</p>	<p><b>To create, critique and evaluate your pneumatic prototype.</b></p> <p><b>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</b></p> <p><b>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.</b></p> <p><b>Understand and use electrical systems in their products (for</b></p>	<p>Test and evaluate products against a detailed design specification and make adaptations as they develop the product.</p> <p>Select and combine materials with precision.</p>	<p>Testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture.</p> <p>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.</p> <p>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.</p>

	example, series circuits incorporating switches, bulbs, buzzers and motors).		
Lesson 6 – Express Evaluation	<p><b>To evaluate your prototype against the design criteria and the views of others.</b></p> <p><b>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</b></p>	Survey users in a range of focus groups and compare results.	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.

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## Subject Leader planning – Design & Technology



UKS2 – Spring - Cycle A

Eat the Seasons	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Seasonality	<b>To understand where our food comes from.</b>  NC - Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	Describe what seasonality means and explain some of the reasons why it is beneficial.	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.  Food hygiene is important to prevent the spread of disease-causing microorganisms.
Lesson 2 - Develop Benefits of seasonal eating	<b>To know and understand what a healthy and balanced diet is and why it is important.</b>  NC - Understand and apply the principles of a healthy and varied diet.	Evaluate meals and consider if they contribute towards a balanced diet.	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.
Lesson 3 – Develop Dicing, peeling and grating	<b>To prepare and cook a meal using a range of cooking techniques.</b>  NC - Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.	Use an increasing range of preparation and cooking techniques to cook a sweet or savoury dish.	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.  Food hygiene is important to prevent the spread of disease-causing microorganisms.

Lesson 4 – Innovate Designing	<p><b>To design a healthy, seasonal soup and to understand what the nutritional value is.</b></p> <p><b>NC - Understand and apply the principles of a healthy and varied diet.</b></p>	Evaluate meals and consider if they contribute towards a balanced diet.	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.
Lesson 5 – Innovate Making	<p><b>To prepare and cook a meal using a range of cooking techniques.</b></p> <p><b>NC - Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.</b></p>	Use an increasing range of preparation and cooking techniques to cook a sweet or savoury dish.	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.
Lesson 6 – Express Taste test	<p><b>To evaluate their soup against others views and against how healthy it is.</b></p> <p><b>NC - Understand and apply the principles of a healthy and varied diet.</b></p>	Evaluate meals and consider if they contribute towards a balanced diet.	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.
<b>Links to other subjects</b>	<p><b>RHE:</b></p> <p>To know what constitutes a healthy diet (including understanding calories and other nutritional content).</p>	Evaluate meals and consider if they contribute towards a balanced diet.	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.



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## Subject Leader planning – Design & Technology



UKS2 – Summer - Cycle A

Architecture	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Architecture over time	<p><b>To investigate and analyse how architecture has changed over time.</b></p> <p><b>NC - Investigate and analyse a range of existing products.</b></p> <p><b>Understand how key events and individuals in design and technology have helped shape the world.</b></p>	<p>Explain how the design of a product has been influenced by the culture or society in which it was designed or made.</p> <p>Describe the social influence of a significant designer or inventor.</p>	<p>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.</p>

			<p>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.</p>
<p>Lesson 2 - Develop Greek architecture</p>	<p><b>To investigate and analyse Greek architecture.</b></p> <p><b>NC - Investigate and analyse a range of existing products.</b></p>	<p>Explain how the design of a product has been influenced by the culture or society in which it was designed or made.</p>	<p>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.</p> <p>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.</p>
<p>Lesson 3 – Develop Support, stiffness and stability</p>	<p><b>To understand how support, stiffness and stability is created in structures.</b></p> <p><b>NC - Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</b></p>	<p>Build a framework using a range of materials to support mechanisms.</p>	<p>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.</p> <p>Support, stiffness and stability can be created by using triangular shapes to create strong frameworks, columns to support roofs and overlapping brickwork patterns.</p>

<p>Lesson 4 – Develop Computer-aided design</p>	<p><b>To use computer – aided software to design a feature of classical Greek architecture.</b></p> <p><b>NC - 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.</b></p> <p><b>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</b></p> <p><b>Apply their understanding of computing to program, monitor and control their products.</b></p>	<p>Use pattern pieces and computer-aided design packages to design a product.</p>	<p>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.</p> <p>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.</p>
<p>Lesson 5 – Innovate Building design</p>	<p><b>To use a wide range of materials, equipment and techniques to build a functional building.</b></p> <p><b>NC - Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</b></p> <p><b>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.</b></p>	<p>Build a framework using a range of materials to support mechanisms.</p> <p>Select and combine materials with precision</p>	<p>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.</p> <p>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.</p>

Lesson 6 – Express Evaluation	<p><b>To evaluate your functional building against the design criteria and the views of others.</b></p> <p><b>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</b></p>	Test and evaluate products against a detailed design specification and make adaptations as they develop the product.	Testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture.

#### Gaps:

- **Learning linked to mechanisms and how cams are created.**
- **Cooking and preparing warm food. Healthy and safety links to this.**
- **Weaving and stitching (Artist in residence providing opportunities for this linked to the 'Hall project').**

#### Key vocabulary:

**Food preparation and cooking** – blend, boil, chop, food hygiene, food preparation, health and safety, mash, peel, raw, simmer

**Nutrition** – carbohydrate, fat, fibre, fresh, fruit, kilocalorie, kilojoule, mineral, nutrient, protein, salt, saturated fat, seasonal food, soup, sugar, vegetable, vitamin

**Origins of food** – produce, seasonal fruit, seasonal vegetable, seasonality

**Evaluation** – adjust design, analysis, development, evaluate, evaluation, feedback, focus group, improvement, iterative process, problem-solve, product, prototype, success, test

**Generation of ideas** – design, product, computer-aided design

**Everyday products** – heavy lifting equipment, jack, jack hammer, machinery, paint sprayer, pneumatic machine, pneumatic system, baroque, classic, Corinthian column, Doric column, gothic, industrial, modernist, renaissance, ancient Egyptian, architecture, building, caryatid, frieze, sustainable prehistoric, style, temple, pediment.

**Structures** – brace, lifting arm, load, stable strong, strut, triangle, column, lintel, stability, framework, post, stiffness, support

**Materials for purpose** – appearance, functional, stability, stiffness

**Significant people** – roman builders, ancient Egyptians, prehistoric builders

**Compare and contrast** – difference, similarity

**Investigation** – equipment, investigate, problem – solve, technique, test, version

**Mechanisms and movement** – actuator, air, air pressure, compress, compressor, force, gas, hinge, lever, movement, piston, plunger, pneumatics system, pneumatics, power, syringe, reservoir, valve

**Cutting and joining textiles** – applique, arrange, embellish, fabric crumb, layer

**Decorating and embellishing textiles** – applique, embellish

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## Subject Leader planning – Design & Technology



### UKS2 – Autumn - Cycle B

Food for Life	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Exploring processed foods	<p><b>To investigate and analyse how the production of food has changed over time.</b></p> <p>NC - Investigate and analyse a range of existing products.</p>	<p>Create a detailed comparative report about two or more products or inventions.</p> <p>Analyse how an invention or product has significantly changed or improved people's lives.</p>	<p>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.</p> <p>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.</p> <p>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.</p>
Lesson 2 - Develop Comparing processed and homemade bread	<p><b>To compare the difference processed bread with homemade bread.</b></p> <p>NC - Investigate and analyse a range of existing products.</p>	<p>Create a detailed comparative report about two or more products or inventions.</p> <p>Follow a recipe that requires a variety of techniques and source the necessary ingredients independently.</p>	<p>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.</p> <p>Ingredients can usually be bought at supermarkets, but specialist shops may stock different items. Greengrocers sell fruit and vegetables, butchers sell</p>

	<b>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.</b>		<p>meat, fishmongers sell fresh fish and delicatessens usually sell some unusual prepared foods, as well as cold meats and cheeses.</p> <p>Sliced bread is processed. It can contain many more ingredients than homemade bread, including preservatives and artificial ingredients.</p>
Lesson 3 – Develop Whole foods	<p><b>To prepare and cook a meal using a range of whole foods.</b></p> <p><b>NC - Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.</b></p> <p><b>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</b></p>	<p>Follow a recipe that requires a variety of techniques and source the necessary ingredients independently.</p> <p>Explain how organic produce is grown.</p>	<p>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.</p> <p>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.</p> <p>A recipe provides information to prepare a dish, including ingredients, quantities and a method. They may also contain nutritional information.</p>
Lesson 4 – Innovate Designing a healthy meal	<p><b>To understand how to plan and design a healthy meal.</b></p> <p><b>NC - Understand and apply the principles of a healthy and varied diet.</b></p>	<p>Plan a healthy daily diet, justifying why each meal contributes towards a balanced diet.</p>	<p>Eating a balanced diet is a positive lifestyle choice that should be sustained over time. Food that is high in fat, salt or sugar can still be eaten occasionally as part of a balanced diet.</p>
Lesson 5 – Innovate Making a healthy meal	<p><b>To prepare and cook a healthy meal using a range cooking techniques.</b></p> <p><b>NC - Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.</b></p>	<p>Follow a recipe that requires a variety of techniques and source the necessary ingredients independently.</p>	<p>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</p>

			<p>usually sell some unusual prepared foods, as well as cold meats and cheeses.</p> <p>Techniques include preparation techniques, such as chopping, slicing, dicing, kneading and mashing, and cooking techniques, such as boiling, roasting, frying and baking.</p>
Lesson 6 – Express Evaluation	<p><b>To evaluate their healthy meal using the design criteria and the views of others.</b></p> <p><b>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</b></p>	Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others.	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.
<b>Links with other subjects</b>	<p><b>RHE:</b></p> <p>To know what constitutes a healthy diet (including understanding calories and other nutritional content).</p> <p>To know the principles of planning and preparing a range of healthy meals.</p>	Plan a healthy daily diet, justifying why each meal contributes towards a balanced diet.	Eating a balanced diet is a positive lifestyle choice that should be sustained over time. Food that is high in fat, salt or sugar can still be eaten occasionally as part of a balanced diet.



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## Subject Leader planning – Design & Technology



UKS2 – Spring - Cycle B

Engineer	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Bridges and engineers	<p><b>To investigate and analyse the history of bridges and the engineers that built them.</b></p> <p><b>NC - Investigate and analyse a range of existing products.</b></p> <p><b>Understand how key events and individuals in design and technology have helped shape the world.</b></p>	<p>Analyse how an invention or product has significantly changed or improved people's lives.</p> <p>Present a detailed account of the significance of a favourite designer or inventor.</p>	<p>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.</p> <p>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.</p> <p>Bridges provide a safe route over obstacles, including roads and rivers. They are used by pedestrians, cars, trains and pipelines.</p>
Lesson 2 – Engage Features of bridges	<p><b>To investigate and analyse the similarities and differences between different types of bridges.</b></p> <p><b>NC - Investigate and analyse a range of existing products.</b></p>	<p>Create a detailed comparative report about two or more products or inventions.</p>	<p>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.</p> <p>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.</p>

Lesson 3 – Develop Strengthening paper bridges	<p><b>To investigate and understand the different ways of strengthening a paper bridge.</b></p> <p><b>NC - Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</b></p> <p><b>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.</b></p>	<p>Select the most appropriate materials and frameworks for different structures, explaining what makes them strong.</p> <p>Choose the best materials for a task, showing an understanding of their working characteristics.</p>	<p>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.</p> <p>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.</p>
Lesson 4 – Develop Triangles for strength	<p><b>To use a wide range of materials and equipment to make the bridge stronger.</b></p> <p><b>NC - Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</b></p> <p><b>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.</b></p>	<p>Select the most appropriate materials and frameworks for different structures, explaining what makes them strong.</p> <p>Choose the best materials for a task, showing an understanding of their working characteristics.</p>	<p>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.</p> <p>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.</p> <p>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.</p>
Lesson 5 – Innovate Designing a bridge prototype	<p><b>To research, design and plan how to build a bridge prototype.</b></p>	<p>Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways.</p>	<p>Design criteria should cover the intended use of the product, age range targeted and final appearance. Ideas can be communicated in a range of ways, including through discussion, annotated sketches,</p>

	<p><b>NC - 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.</b></p> <p><b>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</b></p>		cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
Lesson 6 – Innovate Making a bridge prototype	<p><b>To use a wide range of construction materials and tools to build a bridge prototype.</b></p> <p><b>NC - 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.</b></p>	Choose the best materials for a task, showing an understanding of their working characteristics.	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.
Lesson 6 – Express Evaluation	<p><b>To evaluate the bridge prototype using the design criteria and the views of others.</b></p> <p><b>NC - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</b></p>	Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others.	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.

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## Subject Leader planning – Design & Technology



UKS2 – Summer - Cycle B

Make Do and Mend	Learning Objective	Skills	Knowledge
Lesson 1 - Engage Make do and mend campaign	<b>To investigate and analyse how the make do and mend campaign influenced family lives, fashion and the war effort.</b>  NC - Investigate and analyse a range of existing products.	Analyse how an invention or product has significantly changed or improved people's lives.	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.  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.
Lesson 2 – Develop Deconstruct	<b>To select the correct tools in order to investigate a range of clothes.</b>  NC - Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.	Select appropriate tools for a task and use them safely and precisely.	Precision is important in producing a polished, finished product. Correct selection of tools and careful measurement can ensure the parts fit together correctly.  Deconstructing garments identifies how they were made, the materials used and their properties.
Lesson 3 – Develop Stitch	<b>To use a range of equipment and materials to accurately complete a range of stitches.</b>  NC - Select from and use a wider range of tools and equipment to perform practical tasks (for example,	Select appropriate tools for a task and use them safely and precisely.	Precision is important in producing a polished, finished product. Correct selection of tools and careful measurement can ensure the parts fit together correctly.  Hand stitches include running stitch, blanket stitch and whip stitch.

	cutting, shaping, joining and finishing), accurately.		
Lesson 4 – Develop Repair	<p><b>To use a range of stitches in order repair a piece of clothing.</b></p> <p><b>NC - 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.</b></p> <p><b>Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.</b></p>	<p>Choose the best materials for a task, showing an understanding of their working characteristics.</p> <p>Pin and tack fabrics in preparation for sewing and more complex pattern work.</p>	<p>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.</p> <p>Pinning with dressmaker pins and tacking with quick, temporary stitches holds fabric together in preparation for and during sewing.</p>
Lesson 5 – Innovate Mrs Sew and Sew's challenge	<p><b>To use a range of tools and equipment to complete a sewing challenge as a group.</b></p> <p><b>NC - Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.</b></p> <p><b>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.</b></p>	<p>Pin and tack fabrics in preparation for sewing and more complex pattern work.</p> <p>Use different methods of fastening for function and decoration, including press studs, Velcro and buttons.</p>	<p>Pinning with dressmaker pins and tacking with quick, temporary stitches holds fabric together in preparation for and during sewing.</p> <p>Fastenings hold a piece of clothing together. Types of fastenings include zips, press studs, Velcro and buttons.</p>

Lesson 6 – Express Evaluate	<b>To evaluate the final product.</b>  <b>NC - Investigate and analyse a range of existing products.</b>	Create a detailed comparative report about two or more products or inventions.	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.
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#### Key vocabulary:

**Evaluation** – evaluate, evaluation, feedback, modification, reflect, construction feedback, improvement, analysis, improve, results, problem, adapt, repurpose

**Compare and contrast** – advantage, compare, disadvantage, ingredient, taste, texture, use by date, arch bridge, beam bridge, span, support, suspension bridge, tuss bridge, type

**Everyday products** – convenience food, minimally processed, packaging, processed, ultra-processed, unprocessed, accelerometer sensor, appliance, contact sensor, light sensor, proximity sensor, motion sensor, sound sensor, temperature sensor, blouse, clothing, dress, fabric, handmade, hat, garment, jeans, skirt, sock, trouser, repair

**Investigation** – concertina, investigation, layers, shape, strength, Velcro, blanket stitch, button, embroidery, fastening, label, press stud, running stitch, thread, toggle, whip stitch

**Materials for purpose** – stability, strengthening, strength, recycled

**Cutting and joining textiles** – pin, repair, stitch, tack

**Decorating and embellishing textiles** – Velcro, button, embroidery, fastening, press stud, ribbon, sew, toggle, zip

**Generation of ideas** – design criteria, exploded diagram, annotated diagram, modelling prototype, test

**Food preparation and cooking** – bake, blend, boil, brush, cut, fry, halve, health and safety, hygiene, mash, peel, pour, sprinkle, spoon, 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

**Structures** – bridge, force, structure, triangle,

**Significant people** – Isambard Kingdom Brunel, Sir Benjamin Baker, Sir John Fowler, Thomas Telford, engineer