Unsworth
Primary School

Together we build understanding

Part of the
Oak
Learning Partnership

Design and Technology Curriculum

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The Unsworth Design and Technology Curriculum

Unsworth Primary School

Design and Technology prepares children to take part in the development of tomorrow's rapidly changing world. Creative thinking encourages children to make positive changes to their quality of life. Our design and technology curriculum include a range of projects, which are well sequenced and provide a clear progression enabling children to develop their designing, planning, making and evaluating skills.

From EYFS to Year 6, our Design and Technology projects encourage children to:

- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
- identify needs and opportunities and respond to developing ideas, creating their own innovative products and systems.
- be creative problem solvers, both as individuals and as part of a team.
- combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices.
- reflect on and evaluate present and past design and technology, its uses and its impacts.
- become informed consumers and potential innovators.

Our inspiring and progressive curriculum allows children to apply their technical knowledge through their creative journey allowing them to design, make and evaluate their own products, these are showcased in individual class floor books which captures this learning process.

We use the *Cornerstones Curriculum* to enhance our Design and Technology offer.

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Our big ideas in Design and Technology

Unsworth Primary School

Our curriculum delivers the EYFS and the National Curriculum programme of study for Design and Technology. Design and Technology in Reception Class is covered in the Expressive Art and Design area of the EYFS Curriculum. Our curriculum is designed to enable our children to work towards an understanding of the following 'big ideas' in design and technology. This culmlative knowledge is developed over time through each of the termly projects in appropriate, age-related steps.

By the time a child reaches Y6 we expect them to know and understand:

- 1. Designing is an iterative process; ideas are communicates using annotated drawing, exploded diagrams, prototypes, pattern pieces or CAD and alterations and improvements are made to the design throughout the making process.
- 2. Evaluation of a product ensures it matches the design criteria and is fit for purpose
- 3. Simple structures are made by cutting, joining/sticking and strengthening everyday materials including paper and wood
- 4. Simple structures are made by cutting, joining/sticking and strengthening everyday materials including paper, wood
- 5. Architecture through history has been innovative, pioneering ways to create structural strength and stability in more complex buildings and structures
- 6. Architecture through history has been innovative, pioneering ways to create structural strength and stability in more complex buildings and structures
- 7. Mechanisms (such as levers and linkages, pulleys, cams, gears, wheels and axles) create different types of 'movements' in devices and machines

  8. Electrical systems and simple circuits (such as bulbs, buzzers, and switches) enhance mechanisms and electrical products
- 9. Recipes provide step by step instructions to prepare and cook different dishes and involve a range of cooking techniques
- 10. Seasonality: know where and how a variety of ingredients are grown, reared, caught, and processed.

Design and Technology Curriculum Overview

Unsworth Primary School

Year Group	Projects			
R	**Let's explore**	**Ready Steady Grow**	**On the Beach**	
1	**Shade and Shelter**	**Taxi!**	**Chop, Slice and Mask**	
2	**Remarkable Recipes**	**Beach Hut**	**Cut, Stitch and Join**	**Push and Pull**
3	**Cook Well, Eatwell**	**Making it Move**	**Greenhouse**	
4	**Fresh Food, Good food**	**Functional and Fancy Fabrics**	**Tomb builders**	
5	**Moving Mechanisms**	**Eat the Seasons**	**Architecture**	
6	**Food for life**	**Engineer**	**Make do and Mend**	

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Design and Technology Units Overview

Unsworth Primary School

Class	Autumn	Spring	Summer
Unit title	**Let's Explore** **Big idea link:**	**Ready Steady Grow** **Big idea link:**	**On the Beach** **Big idea link:**
R	**Key knowledge:** • 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 **Key Skill:** • Construct simple structures and models using a range of materials. • Adapt and refine their work as they are constructing and making. • Develop their own ideas and explore a variety of resources, including blocks and construction kits to create 'small worlds' and objects linked to their interests. • Everyday products are objects that we use every day. These objects have a specific use. • Name and explore a range of everyday products and begin to talk about how they are used.	**Key knowledge:** • Vehicles and machines have wheels and axles to help them move. • Recognise that it is possible to change and alter their designs and ideas as they are making them. **Key Skill:** • Construct simple structures and models using a range of materials. • Adapt and refine their work as they are constructing and making. • Explore, build and play with a range of resources and construction kits with wheels and axles.	**Key knowledge:** • Different materials are suitable for different purposes, such as construction kits for modelling and ingredients for baking. **Key Skill:** • Select appropriate materials when making. • Adapt and refine their work as they are constructing and making.
	CONTINUOUS & ENHANCED PROVISION Children will have access to a range of design and technology activities through the continuous provision. Regular enhancements will provide opportunity for building on developing skills and ensure learning is embedded. Children will have the opportunity to produce creative and imaginative work linked to the different projects. Children will have the opportunity to explore their ideas and record their experiences, as well as exploring and evaluating different aspects of design and technology. Children will become confident and proficient in a variety of techniques including: using one handed tools, making a sculpture from junk modelling resources, exploring concepts and ideas through their representations, making choices about what they want to make and selecting the materials they need, talk about their work, and share their creations, explaining the process they have used.		

Unit title	Shade and Shelter Big idea link:	Taxi Big idea link:	Chop, Slice and Mash Big idea link:
1	**Key knowledge:** • Different materials can be used for different purposes, depending on their properties. • 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. • Design criteria are the explicit goals that a project must achieve. • A play den is a shelter, usually built outside. It is a temporary structure made from found or readily available materials. • Two products can be compared by looking at a set of criteria and scoring both products against each one. • 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, etc. • Everyday products are objects that are used routinely at home and school - All products are designed for a specific purpose. • A shelter is a structure designed to give protection from weather or danger. • Different materials are suitable for different purposes, depending on their specific properties. • A strength is a good quality of a piece of work. A weakness is an area that could be improved. **Key Skill:** • Construct simple structures, models or other products using a range of materials. • Create a design to meet simple design criteria. • Describe the similarities and differences between two products. • Follow the rules to keep safe during a practical task.	**Key knowledge:** • Design criteria are the explicit goals that a project must achieve. • 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. • 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. It has a rod or spindle that passes through the centre of a wheel to connect two wheels. • A chassis is the frame of a vehicle. Most vehicles that move on land have axles and wheels that are fixed to a chassis. • A strength is a good quality of a piece of work. A weakness is an area that could be improved. **Key Skill:** • Create a design to meet simple design criteria. • Talk about their own and each other's work, identifying strengths or weaknesses and offering support. • Describe the similarities and differences between two products. • Name and explore a range of everyday products and describe how they are used. • Use wheels and axles to make a simple moving model. **Key Vocabulary** Compare, difference, similarity, change, improve, strength, weakness, axle, chassis, vehicle, wheel, criteria, design, diagram, idea, attach, evaluate, strong, tool, weak, material, purpose, axle, chassis,	**Key knowledge:** • Design criteria are the explicit goals that a project must achieve. • The importance of a product may be that it fulfils its goals and performs a useful purpose. • 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. • Using non-standard measures is a way of measuring that does not involve reading scales. • 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 • Fruits and vegetables can be mixed to make a healthy salad. Salad dressings can improve the flavour of salads. • Specific tools are used for particular purposes eg, scissors are used for cutting and glue is used for sticking, knives are used for slicing/chopping, a grater is used for grating, a vegetable peeler is used for peeling and a masher is used for crushing. • Some foods come from animals, such as meat, fish and dairy products. • A strength is a good quality of a piece of work. A weakness is an area that could be improved. • Hand washing and good hygiene are important parts of a healthy lifestyle and prevent the spread of germs. **Key Skill:** • Create a design to meet simple design criteria. • Describe why a product is important. • Follow rules to keep safe during a practical task. • Measure and weigh food items using non-standard measures, such as spoons and cups. • Select healthy ingredients for a fruit/veg. salad. • Select appropriate tool for a simple practical task.

	• Name and explore a range of everyday products and describe how they are used. • Select and use a range of materials, beginning to explain their choices. • Talk about their own and each other's work, identifying strengths or weaknesses and offering support. **Key vocabulary:** Compare, different, similar, change, criteria, difficulty, evaluate, evaluation, improve, strength, weakness, function, permanent, protection, purpose, shelter, structure, temporary, design, design criteria, drawing, frame, function, idea, label, material, plan, purpose, shape, size, brick, construction, fabric, rope, stick, tarpaulin, wooden cane, appearance, construction, design, entry point, finish, functionality ,joining, model, product, roof, safety, structure, tools, wall.	connect, move, roll, wheel, product, taxi, transport, vehicle, safety, tool, model, part, test.	• Sort foods into groups by whether they are from an animal or plant source. • Talk about own and each other's work, identifying strengths/weaknesses and offering support. • Explain why hand washing and cleanliness are important. **Key Vocabulary** Evaluate, evaluation, improve, success, design, design criteria, diagram, label, chop, grate, grater, knife, mash, masher, peel, peeler, slice, tear, flavour, fruit, healthy, ingredient, salad, vegetable, animal, dairy product, fish, flower, fruit, leaf, meat, but, plant, root, seed, source, stem, hygiene, rule, safety,
Unit title	**Remarkable Recipes** **Big idea link:**	**Beach Hut** **Big idea link:**	**Cut, Stitch and Join** **Big idea link:**
2	**Key Knowledge:** • 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. • Create a design to meet simple design criteria. • Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned. • Many key individuals have helped to shape the world. These include engineers, scientists, designers, inventors and many other people in important roles. • Ideas can be communicated in a variety of ways, including written work, drawings and diagrams,	**Key Knowledge:** • Properties of components and materials determine how they can and cannot be used. • Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned. • 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. • Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology.	**Key Knowledge:** • Embellishment is a decorative detail or feature added to something to make it more attractive. • Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect. • Products can be compared by looking at particular characteristics of each and deciding which is better suited to the purpose. • Products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive. • There are many fabric home products. These include bedding, tea towels, cushions, tea cosies, toiletry bags and other containers.

	modelling, speaking and using information and communication technology. • A recipe is a set of instructions for preparing and cooking dishes. It is divided into sections, giving information about the dish being prepared, the preparation time, the number it serves, the equipment needed, the ingredients needed and the sequential steps to follow. A recipe may also include a picture. • 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. • Some ingredients need to be prepared before they can be cooked or eaten. There are many ways to prepare ingredients: peeling skins using a vegetable peeler, such as potato skins; grating hard ingredients, such as cheese or chocolate; chopping vegetables, such as onions and peppers and slicing foods, such as bread and apples. • 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. • Hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriately and wiping up spills. **Key Skill:**	• Different tools have characteristics that make them suitable for specific purposes. **Key Skill:** • Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect. • Explain how closely their finished products meet their design criteria and say what they could do better in the future. • Explore how a structure can be made stronger, stiffer and more stable. • Generate and communicate their ideas through a range of different methods • Select the appropriate tool for a task and explain their choice. **Key Vocabulary** Change, improve, strength, success, weakness, describe, diagram, label, cut, finish, model, support, tool, material, property, use, equipment, safety, tool, construct, frame, join, joint, stable, stiff, strengthen, structure.	• Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned. • Many key individuals have helped to shape the world. These include engineers, scientists, designers, inventors and many other people in important roles. • 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. • Cath Kidston is an influential British brand, famous for making textiles, clothing, and furnishings. • Different tools have characteristics that make them suitable for specific purposes. • A sewing pattern is a template of the parts needed to make a garment or product. Pattern pieces are usually made from paper. • 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. **Key Skill:** • Add simple decorative embellishments, such as buttons, prints, sequins and appliqué. • Properties of components and materials determine how they can and cannot be used. Eg. plastic is shiny and strong but it can be difficult to paint. • Compare different or the same products from the same or different brands. • Explain how an everyday product could be improved. • Explain how closely their finished products meet their design criteria and say what they could do better in the future. • Explain why a designer or inventor is important. • Generate and communicate their ideas through a range of different methods. • Select the appropriate tool for a task and explain their choice. • Use different methods of joining fabrics, including glue and running stitch.

	• Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal. • Explain how closely their finished products meet their design criteria and say what they could do better in the future • Explain why a designer or inventor is important. • Generate and communicate their ideas through a range of different methods. • Identify the origin of some common foods (milk, eggs, some meats, common fruit and vegetables). • Prepare ingredients by peeling, grating, chopping and slicing. • Select the appropriate tool for a task and explain their choice. • Work safely and hygienically in construction and cooking activities. **Key Vocabulary** Change, dislike, evaluate, evaluation, improve, like, success, design, design criteria, drawing, equipment, ingredient, instruction, label, method, picture, recipe, test, fork, grate, grater, grip, knife, mash, masher, measure, measuring spoon, mix, peel, peeler, property, purpose, slice, spoon, spread, tongs, tool ingredient, measure, preparation, animal, diet, fish, flower, fruit, leaf, mixed, nut, plant, pulse, root, seed, shellfish, source, stem, vegan, vegetarian		**Key Vocabulary** Compare, design, different, landmarks, motif, same, spots, stripes, cut, fabric, fasten, glue, join, needle, running stitch, sew, stitch, textile, thread, tie, applique, button, decorative, embellishment, fabric, printing, sequin, attractive, cushion, hardwearing, improve, peg bag, pillowcase, product, slippers, tablecloth, tea cosy, tea towel, toiletry bag, bag tag, design, diagram, explore, talk, cut, equipment, glue, join, sewing pattern, stapler, tool, decorative, brand, Cath Kidston, distinctive, fashion, homeware designer, inspire, vintage. **Push and Pull** **Big idea link:** **Key Knowledge:** • Properties of components and materials determine how they can and cannot be used. • 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. • Products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive. • Use a range of mechanisms (levers, sliders, wheels and axles) in models or products. **Key Skill:** • Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect • Explain how an everyday product could be improved.

			• 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. **Key Vocabulary** Different, feature, similar, design criteria, evaluation, finish improvement, product, successful, greetings card, improve, product, labelled diagram, plan, sketch, test, card, material, metal, plastic, property, stiff, bar, component, fixed pivot, force, lever, linkage, machine, mechanism, motion, movement, moving pivot, pivot, pull, push, slider, slider mechanism
Unit title	**Cook Well, Eatwell** **Big idea link:**	**Making it Move** **Big idea link:**	**Greenhouse** **Big idea link:**
3	**Key Knowledge:** • Key inventions in design and technology have changed the way people live • Develop design criteria to inform a design. • 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. • 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. • 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 Knowledge:** • Key inventions in design and technology have changed the way people live. • 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. • Automata are machines that seem to move on their own and are intended to intrigue and delight an audience. • Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box. • 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.	**Key Knowledge:** • 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. • 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. • Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box. • A greenhouse is a building where plants can grow in a warm and protected environment. Greenhouses let light in through transparent or translucent walls and roofs. Windows, vents or fans provide ventilation.

	• Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning • Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. • Electrical appliances must only be used under the supervision of an adult, Safety rules must also be followed when using electricity. **Key Skill:** • Describe how key events in design and technology have shaped the world. • 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. • Identify and name foods that are produced in different places. • Identify the main food groups (carbohydrates, protein, dairy, fruits and vegetables, fats and sugars). • Prepare and cook a simple savoury dish. • Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account. • Use appliances safely with adult supervision. **Key Vocabulary** Evaluate, evaluation, improve, success, bake, barbecue, boil, chop, cook, deseed, dice, fry,grate, grill, hob, ingredient, method, microwave, mix, oven, peel, prepare, roast, skin, slice, slow cooker, steam, design, design criteria, diagram, health and safety, plan, balanced, calcium, carbohydrate, dairy, diet, eatwell guide, fibre, food group, fruit, healthy, nutrient, nutition, oil, protein, vegetable, vitamin, food standards agency	• Cams are devices that can convert circular motion into up-and-down motion. Different shaped cams produce different patterns of movement in the follower. • Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. • 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. **Key Skill:** • Describe how key events in design and technology have shaped the world. • Develop design criteria to inform a design • Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products. • Explain how an existing product benefits the user. • Plan which materials will be needed for a task and explain why. • Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account. • Use tools safely for cutting and joining materials and components. **Key Vocabulary** Demonstrate, discussion, evaluate, explain, feedback, finish, improve, improvement, quality, reflect, strength, structure, design, design criteria, diagram, component, cut, join, material, test, automation toy, axle, cam, component, down, elliptical cam, follower, heart cam, hexagonal cam, lever, linkage, machine, mechanical, mechanism, motion, movement, off-centre circular cam, pear cam, rotational, slider, snail cam, square cam, up, wheel.	• Work from different designers can be compared by assessing specific criteria, such as their visual impact, fitness for purpose and target market. • There are similarities and differences between the Great Conservatory of Chatsworth House and the Eden Project biomes. Both greenhouses were built to house tropical plants and have a frame structure. However, the frameworks are made of different materials and the greenhouses are heated in different ways. • Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost. • Materials, such as glass and plastic are suitable for making greenhouse roofs and walls because they are transparent, waterproof and hardwearing. **Key Skill:** • Create shell or frame structures using diagonal struts to strengthen them. • Develop design criteria to inform a design. • Explain how an existing product benefits the user. • Explain the similarities and difference between the work of two designers. • Plan which materials will be needed for a task and explain why. • Use tools safely for cutting and joining materials and components. • Specific tools can be used for cutting, such as saws. Safety rules must be followed to prevent injury from sharp blades. • A hot glue gun can join materials, including wood, some plastics, metal, fabric and paper. **Key Vocabulary** Biome, compare, conservatory, designer, difference, purpose, similarity, structure, style, change, design criteria, effective, findings, improvement, observation, suitability, cloche, cold frame, greenhouse, design, design criteria, diagram, dimension, plan, bench hook, butt joint, explore, G clamp, gluing, hacksaw, hot glue gun, improve, investigate, joining, reinforcing, strengthening, test,

			triangular corner, glass, hardwearing, material, plastic, property, purpose, strength, transparent, waterproof, safety rules, supervision, diagonal strut, frame structure, stability, strength, three-dimensional, triangular shape.
Unit title	**Fresh food, Good food** **Big idea link:**	**Functional and Fancy Fabrics** **Big idea link:**	**Tomb Builders** **Big idea link:**
4	**Key Knowledge:** • Different materials and components have a range of properties, making them suitable for different tasks. • Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season. • Healthy snacks include fresh/dried fruit and vegetables, nuts/seeds, rice cakes with low-fat cream cheese, or chopped vegetables/hummus. • 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. • Food deteriorates due to the growth of microorganisms - decay prevented by preservation methods, such as drying, salting, pickling, canning, pasteurising, refrigerating or freezing the food. • Particular areas of the world have conditions suited to growing certain crops, such as coffee in Peru and citrus fruits in California in the USA. • Cooking techniques include baking, boiling, frying, grilling and roasting. • 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 Knowledge: • Different materials and components have a range of properties, making them suitable for different tasks. Eg. Fabrics can be natural or synthetic. Natural fabrics include cotton, silk and wool. Synthetic fabrics include Lycra, polyester and nylon. • A comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored. • Block printing techniques and fabric paint are used to create decorative, repeated patterns on fabrics. • Significant designers and inventors can shape the world. Eg. 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. • 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. • 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. • Design features include purpose and function, appearance, quality, material, size, colour, pattern, embellishment, durability and usability. • Joining tools to use with fabric include needles, pins and clips, cutting tools include a variety of	**Key Knowledge:** • Different materials and components have a range of properties, making them suitable for different tasks. Eg. Characteristics of materials, such as rigidity, strength and smoothness will affect the success of a working model. • 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. • Simple machines make physical jobs easier by changing the strength or direction of a force. • 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 Skill:** • Choose from a range of materials, showing an understanding of their different characteristics. • Explore and use a range of mechanisms (levers, axles, cams, gears and pulleys) in models or products. • 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.

	• Design features are the aspects of a product's design eg. a particular material or feature that makes the product easier to use or more durable. • Materials, including plastic, paper, cardboard, foil and metal, can be used to package food. Some types of packaging, such as tin cans, can significantly extend the shelf life of some foods. • Some packaging is more environmentally friendly than others. • 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. • Most cardboard packaging is produced from a net. Packages can be strengthened by using thicker cardboard or multiple layers. • Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way. **Key Skill:** • Choose from a range of materials, showing an understanding of their different characteristics. • Design a healthy snack or packed lunch and explain why it is healthy. • Explain how and why a significant designer or inventor shaped the world. • Identify and name foods that are produced in different places in the UK and beyond. • Identify and use a range of cooking techniques to prepare a simple meal or snack. • 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. • Investigate and identify the design features of a familiar product. • Prototype shell and frame structures, showing awareness of how to strengthen, stiffen and reinforce them. • Use annotated sketches and exploded diagrams to test and communicate their ideas.	scissors such as pinking shears, finishing tools include an iron and ironing board. • Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way. Key Skill: • Choose from a range of materials, showing an understanding of their different characteristics. • Create and complete a comparison table to compare two or more products. • Create detailed decorative patterns on fabric using printing techniques. • Explain how and why a significant designer or inventor shaped the world. • Hand sew a hem or seam using a running stitch. • 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. • Investigate and identify the design features of a familiar product. • Select, name and use tools with adult supervision. • 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. • Use annotated sketches and exploded diagrams to test and communicate their ideas. **Key Vocabulary** Appearance, colour, compare, component, different, embellishment, function, material, pattern, property, purpose, quality, similar, size, fraying, hem, pinking	**Key Vocabulary** Change, evaluation, evaluate, improve, success, compound machine, device, simple machine, annotated sketch, labelled diagram, prototype, characteristic, material, property, rigid, smooth, strength, axle, effort, first class, force, fulcrum, inclined plane, lever, load, pulley, screw, second class, simple machine, third class, wedge, wheel

	• Work safely with everyday chemical products under supervision, such as disinfectant hand wash and surface cleaning spray. **Key Vocabulary:** Evaluation, improve, success, bag, bottle, box, can, carton, cling flim, compostable, food packaging, jar, recyclable, recycle, reuse, Tetra Pak, Tupperware, bake, blender, chop, chopping board, cool, crush, cut, garlic press, grate, heat, knife, mash, masher, mix, pastry brush, peel, slice, spread, tear, wash, build,deconstruct, net, reconstruct, sketch, card, cardboard, glass, paper, plastic, polystyrene, tin, tin foil, fresh, healthy, snack, best before, canning, Dr Ruben Rausing, drying, Earl Tupper, freexing, Gerald Thomas, Henry D Thatcher, Jacob Perkins, Kruger Brewing Co, Louis Pasteur, Nicolas Appert, pasteurisation, Peter Durand, pickling, Ralph Wiley, refrigeration, salting, saran wrap, TV dinners, use by, William Cullen, William Kellogg, cone, cube, cuboid, hexagonal prism, net, prototype, triangular prism.	shears, running stitch, saw, block printing, diamond, pattern structure, trellis, wey, attractive, design criteria, evaluation, improvement, review, success, home furnishing, home product, annotate, plan, sketch, comfortable, delicate, durable, fabric, flexibility, flexible, lightweight, man-made, material, natural, property, soft, strength, stretchy, strong, synthetic, textile, texture, tough, use, versatile, waterproof, Morris & Co, textile designer, William Morris	
Unit title	**Moving Mechanisms** **Big idea link:**	**Eat the Seasons** **Big idea link:**	**Architecture** **Big idea link:**
5	**Key Knowledge:** • 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. • 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 • 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. • Safety features are often incorporated into products that might cause harm	**Key Knowledge:** • Seasonality is the time of year when the harvest or flavour of a type of food is at its best. • Food hygiene is important to prevent the spread of disease-causing microorganisms. • Foods can be prepared and cooked in different ways to achieve different results. • 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. • 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.	**Key Knowledge:** • 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. • Support, stiffness and stability can be created by using triangular shapes to create strong frameworks, columns to support roofs and overlapping brickwork patterns. • Many new designs and inventions influenced society eg. labour-saving devices in the home reduced the amount of housework, which was traditionally done by women. This enabled them to have jobs.

	• Materials should be cut and combined with precision. • There are many rules for using tools safely and these may vary depending on the tools being used. • A focus group is a small group of people whose reactions and opinions about a product are taken and studied. • Testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture. • 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. • 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. **Key Skill:** • Build a framework using a range of materials to support mechanisms. • Explain how the design of a product has been influenced by the culture or society in which it was designed or made. • Explain the functionality and purpose of safety features on a range of products. • Name and select increasingly appropriate tools for a task and use them safely. • Select and combine materials with precision. • Survey users in a range of focus groups and compare results. • Test and evaluate products against a detailed design specification and make adaptations as they develop the product. • Use mechanical systems in their products, such as pneumatics. **Key Vocabulary**	• Food hygiene is important to prevent the spread of disease-causing microorganisms. • Foods can be prepared and cooked in different ways to achieve different results. **Key Skill:** • Describe what seasonality means and explain some of the reasons why it is beneficial. • Evaluate meals and consider if they contribute towards a balanced diet. • Use an increasing range of preparation and cooking techniques to cook a sweet or savoury dish. **Key Vocabulary** Blend, boil, brown, chop, cooked, dice, food hygiene, food preparation, grate, health and safety, mash, peel, puree, raw, saute, simmer, steam, carbohydrate, fat, fibre, fresh, fruit, healthy, kilocalorie, kilohoule, mineral, nutrient, nutritional value, protein, salt, saturated fat, seasonal food, soup, sugar, vegetable, vitamin, produce, seasonal fruit, seasonality, seasonal vegetable	• Culture affects the design of some products. Eg. 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, colours might mean very different things in different cultures. • Architecture styles and technology have changed over time. Key periods include Classical architecture with the use of columns, order and symmetry, Gothic architecture, with more delicate stonework, large windows and flying buttresses, and modern architecture, where function is more important than form or attractiveness. • 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. • 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. • Testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture. • 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. • CAD (computer-aided design) 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. **Key Skill:** • Build a framework using a range of materials to support mechanisms

	Difference, similarity, adjust design, analysis, deployment, evaluate, evaluation, feedback ,focus group, improvement, iterative process, problem-solve, prototype, success, test, product, heavy lifting, jack, jack hammer, machinery, paint sprayer, pneumatic machine, pneumatic system, equipment, investigate, problem-solve, technique, test, version, actuator, air, air pressure, compress, force, gas, hinge, lever, movement, piston, plunger, pneumatics, pneumatic system, power, reservoir, syringe, valve, brace, lifting arm, load, stable, strong, structure, strut, sturdy, triangle.		• Describe the social influence of a significant designer or inventor • Explain how the design of a product has been influenced by the culture or society in which it was designed or made. • Select and combine materials with precision. • Test and evaluate products against a detailed design specification and make adaptations as they develop the product. • Use pattern pieces and computer-aided design packages to design a product. **Key Vocabulary** Discuss, evaluation, improve, ancient Egyptian, architecture, Baroque, building, caryatid, classical, Corinthian column, doric column, entablature, frieze, gothic, industrial, ionic column, modernist, pediment, postmodern, prehistoric, renaissance, style, sustainable, temple, computer-aided design, design, product, appearance, functional, stability, stiffness, prehistoric builders, roman builders, column, framework, lintel, post, structure, support.

Unit title	Food for Life Big idea link:	Engineers Big idea link:	Make do and Mend Big idea link:
6	**Key Knowledge:** • People's lives have been improved in countless ways due to new inventions and designs. • 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. • 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. • Sliced bread is processed. It can contain many more ingredients than homemade bread, including preservatives and artificial ingredients. • Yeast is a leavening agent that makes bread rise. Kneading is a technique used to make bread dough. Proving means to leave bread dough, which contains yeast, to rise. • 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. • 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 • 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.	**Key Knowledge:** • Bridges provide a safe route over obstacles, including roads and rivers. They are used by pedestrians, cars, trains and pipelines. • Bridge structures have changed over time with innovations in design and materials. Significant bridges include the Menai Bridge, Clifton Suspension Bridge and Forth Bridge. • 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. • Different materials are selected for specific purposes. This might include flexibility, waterproofing, texture, colour, cost and availability. • 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. • 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. • 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, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design • 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.	**Key Knowledge:** • People's lives have been improved in countless ways due to new inventions and designs. Eg. example, the Morrison shelter, designed by John Baker in 1941, was an indoor air-raid shelter used during the Second World War. • In 1941, the British government introduced clothes rationing. • Make Do and Mend was a campaign run by the Ministry of Information to encourage people to recycle and repurpose their old clothes rather than buy new. • Different materials are selected for specific purposes. This might include flexibility, waterproofing, texture, colour, cost and availability. • Mrs Sew and Sew was a character promoted by the Make Do and Mend campaign to encourage people to be more efficient and creative with their old clothing. • 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. • Pinning with dressmaker pins and tacking with quick, temporary stitches holds fabric together in preparation for and during sewing. • Precision is important in producing a polished, finished product. • Deconstructing garments identifies how they were made, the materials used and their properties. • Hand stitches include running stitch, blanket stitch and whip stitch. • Fastenings hold a piece of clothing together. Types of fastenings include zips, press studs, Velcro and buttons. **Key Skill:** • Analyse how an invention or product has significantly changed or improved people's lives.

	• A recipe provides information to prepare a dish, including ingredients, quantities and a method. They may also contain nutritional information. • Techniques include preparation techniques, such as chopping, slicing, dicing, kneading and mashing, and cooking techniques, such as boiling, roasting, frying and baking. • 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 **Key Skill:** • Analyse how an invention or product has significantly changed or improved people's lives. • Create a detailed comparative report about two or more products or invention • Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others. • Explain how organic produce is grown. • Follow a recipe that requires a variety of techniques and source the necessary ingredients independently. • Plan a healthy daily diet, justifying why each meal contributes towards a balanced diet. **Key Vocabulary** Advantage, compare, comparison, disadvantage, ingredient, nutritional value, taste, texture, use by date, evaluate, evaluation, feedback, modification, reflect, convenience food, minimally processed, packaging, processed, ultra-processed, unprocessed, bake, blend, boil, brush, chop, cool, crush, cut, dough, fry, halve, health & safety, heat, hygiene, knead, mash, mix, peel, pour, prove, recipe, reheat, simmer, slow cook, spoon, spread, sprinkle, stir, store, yeast, balanced, carbohydrate, daily menu, dairy, diet, eatwell guide, fruit, healthy, oil, organic, protein, vegetable, animal feed additive, farm, fertiliser, labour intensive, organic, pesticide, whole food.	• Strength can be added to a framework by using multiple layers eg. 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. • 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 **Key Skill:** • Analyse how an invention or product has significantly changed or improved people's lives. • Choose the best materials for a task, showing an understanding of their working characteristics. • Create a detailed comparative report about two or more products or inventions. • Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others. • Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways. • Present a detailed account of the significance of a favourite designer or inventor. • Select the most appropriate materials and frameworks for different structures, explaining what makes them strong. **Key Vocabulary** Stability, strength, strengthening, engineer, Isambard Kingdom Bruei, Sir Benhamin Baker, Sir John Fowler, Thomas Telford, bridge, force, structure, triangle, arch bridge, beam bridge, compare, material, span, support, suspension bridge, truss bridge, type, analysis, evaluation, feedback, improve, problem, results, annotated diagram, design, design criteria, exploded diagram, modelling, prototype, test, concertina, investigation, layers, shape	• Choose the best materials for a task, showing an understanding of their working characteristics. • Create a detailed comparative report about two or more products or inventions. • Pin and tack fabrics in preparation for sewing and more complex pattern work. • Select appropriate tools for a task and use them safely and precisely. • Use different methods of fastening for function and decoration, including press studs, Velcro and buttons. **Key Vocabulary** Compare, evaluate, pin, repair, stitch, tack, button, embroidery, fastening, press stud, ribbon, sew, tie, toggle, Velcro, zip, adapt, change, repurpose, blouse, clothing, dress, fabric, fashion, garment, handmade, hat, jacket, jeans, recycle, repair, shirt, skirt, sock, trousers, blanket stitch, button, decorative, fabric property, function, investigate, label, needle, observation, running stitch, seam, thread, whip stitch, recycled

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