



Design & Technology Progression Document

Aims:

The national curriculum for design and technology aims to ensure that all pupils:

- Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world.
- Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users.
- Critique, evaluate and test their ideas and products and the work of others.
- Understand and apply the principles of nutrition and learn how to cook.

National Curriculum Objective

Key Vocabulary

This list is not exhaustive and may be edited to reflect the age of the pupils

Progression of component skills

This relates to the design and technology skills which pupils should have developed and practised

Nursery

End points

- To begin to construct vertically and horizontally to create enclosures and make spaces.
- To be able to explore different materials freely to develop ideas about how to use them and what to make.
- To confidently select and use tools for a purpose.

build
model
join
construct
improve
tools

See Developing Curriculum Nursery for component skills.

Reception

End points and Early Learning Goals

- To build upon their previous learning refining their ideas and developing ways to represent them.

construct
design
adapt
evaluate



- To work collaboratively sharing ideas, resources and skills. - To confidently select tools and techniques needed to shape, assemble and join materials. - To safely and competently use tools and resources. - To construct with a purpose in mind using a variety of resources. <u>ELG Creating with materials</u> - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. - Share their creations, explaining the process they have used.	explain function materials tools plan	See Developing Curriculum Reception for component skills.	
National Curriculum Objective	Key Vocabulary This list is not exhaustive and may be edited to reflect the age of the pupils	Topic and Key Questions The answers to these questions relate to some of the essential knowledge which pupils should have acquired by the end of a topic	Progression of Skills This relates to the design and technology skills which pupils should have developed and practised by the end of a topic
Year 1			
Link to other learning - Science topic on properties of materials - Geography – winter seasons - RE – Christmas - History - toys Prior learning - Explored and used different fabrics. - Cut and joined fabrics with simple techniques. - Thought about the user and purpose of products.	names of existing products, joining and finishing techniques, tools, fabrics and components template, pattern pieces, mark out, join, decorate, finish	Autumn Term Textiles: templates & joining sides Task: Create a Christmas decoration or a decoration to hang up in your bedroom using textiles Key Question: How do I design a decoration which is attractive, purposeful and which meets my design criteria?	- Begin to draw on their own experience to help generate ideas and research conducted on criteria. - Begin to understand the development of existing products: What they are for, how they work, materials used. Start to suggest ideas and explain what they are going to do.



Designing • Design a functional and appealing product for a chosen user and purpose based on simple design criteria. • Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology. Making • Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. • Select from and use textiles according to their characteristics. Evaluating • Explore and evaluate a range of existing textile products relevant to the project being undertaken. • Evaluate their ideas throughout and their final products against original design criteria. Technical knowledge and understanding • Know and use technical vocabulary relevant to the project.	features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function	Other questions to explore include: How many parts is it made from? What is it joined with? How is it finished? Why do you think these joining techniques have been chosen? How is it fastened? Who might use it and why? What parts will the product need to have and what will it be made from? What size will it be? How will it be joined and finished?	• Understand how to identify a target group for what they intend to design and make based on a design criteria. • Begin to develop their ideas through talk and drawings. Make templates and mock ups of their ideas in card and paper or using ICT. • Suggest ideas and explain what they are going to do. • Model their ideas in card and paper. • Evaluate their product by discussing how well it works in relation to the purpose • Evaluate their products as they are developed, identifying strengths and possible changes they might make • Evaluate their product by asking questions about what they have made and how they have gone about it
Link to other learning • History - toys • History – Robert Peel • Geography – Bury/local area Prior learning • Assembled vehicles with moving wheels using construction kits.	vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism	Spring term Resistant materials: Wheels and axles Task: Make a model of a police vehicle Key Question: How do I design and make a model of a moving vehicle?	• Begin to make their design using appropriate techniques. • Begin to build structures, exploring how they can be made stronger, stiffer and more stable. • Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.



• Explored moving vehicles through play. • Gained some experience of designing, making and evaluating products for a specified user and purpose. • Developed some cutting, joining and finishing skills with card. Designing • Generate initial ideas and simple design criteria through talking and using own experiences. • Develop and communicate ideas through drawings and mock-ups. Making • Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing. • Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. Evaluating • Explore and evaluate a range of products with wheels and axles. • Evaluate their ideas throughout and their products against original criteria. Technical knowledge and understanding • Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the project.	names of tools, equipment and materials used design, make, evaluate, purpose, user, criteria, functional	Other questions to explore include: What do you think will move? How will you make it move? What part of the product moved and how did it move? How do you think the mechanism works? What else could move in the product? How well does it work?	• With help measure, mark out, cut and shape a range of materials. • Explore using tools e.g. scissors and a hole punch safely. • Begin to assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape. Begin to use simple finishing techniques to improve the appearance of their product. • Suggest ideas and explain what they are going to do. • Begin to identify a target group for what they intend to design and make. • Develop their design ideas applying findings from their earlier research. • Use tools <i>e.g. scissors and a punch hole</i> safely. • Evaluate their product by discussing how well it works in relation to the purpose • Evaluate their products as they are developed, identifying strengths and possible changes they might make • Evaluate their product by asking questions about what they have made and how they have gone about it
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Link to other learning • PSHE – healthy living • Science - previous learning about body parts and senses • Science – previous learning about plants and growth Prior learning • Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell. • Experience of cutting soft fruit and vegetables using appropriate utensils. Designing • Design appealing products for a particular user based on simple design criteria. • Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. • Communicate these ideas through talk and drawings. Making • Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. • Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. Evaluating • Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. • Evaluate ideas and finished products against design criteria, including intended user and purpose. Technical knowledge and understanding	fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria	Summer Term Food: a healthy summer smoothie Task: Preparing fruit & vegetables and making a smoothie Key Question: How do I design and safely make a nutritious smoothie using a range of ingredients? Other questions to explore include: Do we eat the whole fruit? Why or why not? Which parts do we eat? What might we have to do before eating this? Why do we cut, grate, peel and slice in this way?	• Begin to understand that all food comes from plants or animals. • Explore the understanding that food has to be farmed, grown elsewhere (e.g. home) or caught. • Start to understand how to name and sort foods into the five groups in 'The Eat well plate' • Begin to understand that everyone should eat at least five portions of fruit and vegetables every day. • Know how to prepare simple dishes safely and hygienically, without using a heat source. • Know how to use techniques such as cutting, peeling and grating. • Suggest ideas and explain what they are going to do. • Select and use appropriate fruit and vegetables, processes and tools. • Use basic food handling, hygienic practices and personal hygiene. • Evaluate their product by discussing how well it works in relation to the purpose • Evaluate their products as they are developed, identifying strengths and possible changes they might make • Evaluate their product by asking questions about what they have made and how they have gone about it
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• Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. • Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of <i>The eatwell plate</i>. • Know and use technical and sensory vocabulary relevant to the project.			
Year 2			
Link to other learning • Science topic on properties of everyday materials • RE and learning about other religions Prior learning • Early experiences of working with paper and card to make simple flaps and hinges. • Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape. Designing • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through drawings and mock-ups with card and paper. Making • Plan by suggesting what to do next. • Select and use tools, explaining their choices, to cut, shape and join paper and card. • Use simple finishing techniques suitable for the product they are creating.	slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join pull, push, up, down, straight, curve, forwards, backwards design, make, evaluate, user, purpose, ideas, design criteria, product, function	Autumn Mechanisms: Sliders and levers Task: Create a pop up Eld card or some other celebratory card Key Question: How do I design and make an appealing card which has an effective mechanism? Other questions to explore include: What do you think will move? How will you make it move? What part of the product moved and how did it move? How do you think the mechanism works? What else could move in the product? How well does it work? How does the slider move? How does the lever move? Which part of the mechanism is the pivot? What does the movement of the slider and lever remind you of?	• Begin to select tools and materials; use correct vocabulary to name and describe them. • Build structures, exploring how they can be made stronger, stiffer and more stable. • With help measure, cut and score with some accuracy. • Learn to use hand tools safely and appropriately. • Start to assemble, join and combine materials in order to make a product. • Demonstrate how to cut, shape and join fabric to make a simple product. Use basic sewing techniques. • Start to choose and use appropriate finishing techniques based on own ideas. • Evaluate against their design criteria • Evaluate their products as they are developed, identifying strengths and possible changes they might make



Evaluating • Explore a range of existing books and everyday products that use simple sliders and levers. • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria. Technical knowledge and understanding • Explore and use sliders and levers. • Understand that different mechanisms produce different types of movement. • Know and use technical vocabulary relevant to the project.			• Talk about their ideas, saying what they like and dislike about them
Link to other learning • Science – human/ animal needs (healthy diet) Prior learning • Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell. • Experience of cutting soft fruit and vegetables using appropriate utensils. Designing • Design appealing products for a particular user based on simple design criteria. • Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. • Communicate these ideas through talk and drawings. Making • Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.	Healthy, crunchy, sweet, smooth, appealing, tasty, ingredients, investigating, preparing, hygiene, cleanliness, utensils, equipment Frieda Caplan Eye-catching, design, evaluate, criteria.	Spring Food: a delicious, nutritional snack Task: Create a delicious treat for an event – e.g a fresh fruit salad or fruit kebabs for sale to other pupils link to Easter Key Question: How do I design and safely make a nutritious snack using a range of ingredients? Other questions to explore include: How can we make this product healthy? What do you prefer and why? What might we want to include in our product to meet our user's preferences? Which fruit/vegetables might be the best for our product to match the occasion/purpose?	• Understand that all food comes from plants or animals. • Know that food has to be farmed, grown elsewhere (e.g. home) or caught. Understand how to name and sort foods into the five groups in 'The Eat well plate' • Know that everyone should eat at least five portions of fruit and vegetables every day. • Demonstrate how to prepare simple dishes safely and hygienically, without using a heat source. • Demonstrate how to use techniques such as cutting, peeling and grating • Follow safe procedures for food safety and hygiene. • Evaluate against their design criteria • Evaluate their products as they are developed, identifying strengths and possible



• Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. Evaluating • Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. • Evaluate ideas and finished products against design criteria, including intended user and purpose. Technical knowledge and understanding • Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. • Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of <i>The eatwell plate</i>. • Know and use technical and sensory vocabulary relevant to the project.			changes they might make • Talk about their ideas, saying what they like and dislike about them
Link to other learning • Science topic on living things and their habitats Prior learning • Experience of using construction kits to build walls, towers and frameworks. • Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card. • Experience of different methods of joining card and paper. Designing	cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved metal, wood, plastic circle, triangle, square, rectangle, cuboid, cube, cylinder	Summer Construction: Freestanding structures Task: Create a model which is strong enough for a small animal to live in e.g. a mock of a kennel for a dog. Key Question: How do I design and make a model of a habitat for a small animal which is stable and strong? Other questions to explore include: What are the structures called and what is their purpose? Who might use them? What materials have been	• Start to generate ideas by drawing on their own and other people's experiences. • Begin to develop their design ideas through discussion, observation, drawing and modelling. • Identify a purpose for what they intend to design and make. • Understand how to identify a target group for what they intend to design and make based on a design criteria. Develop their ideas through talk and drawings and label parts.



• Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through talking, mock-ups and drawings. Making • Plan by suggesting what to do next. • Select and use tools, skills and techniques, explaining their choices. • Select new and reclaimed materials and construction kits to build their structures. • Use simple finishing techniques suitable for the structure they are creating. Evaluating • Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings. • Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. Technical knowledge and understanding • Know how to make freestanding structures stronger, stiffer and more stable. • Know and use technical vocabulary relevant to the project.	design, make, evaluate, user, purpose, ideas, design criteria, product, function	used? Why have these been chosen? How have the parts been joined together? How have the structures been made strong enough? How have they been made stable? How can you stop your structures from falling over? How they can be made stronger and stiffer in order to carry a load?	• Make templates and mock ups of their ideas in card and paper or using ICT. • Evaluate against their design criteria • Evaluate their products as they are developed, identifying strengths and possible changes they might make • Talk about their ideas, saying what they like and dislike about them
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Year 3

Link to other learning • English reading for pleasure • Geography – volcanoes Prior learning • Explored and used mechanisms such as flaps, sliders and levers.	mechanism, level. Linkages pull, push, up, down, straight, curve, forwards, backwards	Autumn Mechanisms: Flaps, levers and linkages Task: Create a child's book which includes sliders/ tabs to pull and a page with lift up mechanism (Link to	• With growing confidence generate ideas for an item, considering its purpose and the user/s. • Start to order the main stages of making a product. Identify a purpose and establish criteria for a successful product.
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• Gained experience of basic cutting, joining and finishing techniques with paper and card. Designing • Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. Making • Order the main stages of making. • Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. • Select from and use finishing techniques suitable for the product they are creating. Evaluating • Investigate and analyse books and, where available, other products with lever and linkage mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make. Technical knowledge and understanding • Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project.	design, make, evaluate, user, purpose, ideas, design criteria, product, function ever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating user, purpose, function prototype, design criteria, innovative, appealing, design brief	volcanoes and structures – non-fiction book) Key question: How do I design and construct an appealing child's book which uses a functional mechanism? Other questions to explore include: Who might it be for? What is its purpose? What do you think will move? How will you make it move? What part moved and how did it move? How do you think the mechanism works? What materials have been used? How effective do you think it is and why? What else could move? Which card strip is the lever? Which card strip is acting as the linkage? Which part of the system is the input and which part the output? What does the type of movement remind you of? Which are the fixed pivots and which are the loose pivots?	• Understand how well products have been designed, made, what materials have been used and the construction technique. • Learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. • Start to understand whether products can be recycled or reused. • Know to make drawings with labels when designing. When planning explain their choice of materials and components including function and aesthetics. • Explore, develop and communicate design proposals by modelling ideas. • Start to think about their ideas as they make progress and be willing to change things if this helps them to improve their work. • Measure, mark out, cut, score and assemble components with more accuracy. • Evaluate their product against original design criteria <i>e.g. how well it meets its intended purpose</i> • Disassemble and evaluate familiar products
Link to other learning • Science topic on properties of materials in Year 2 • Science - plants Prior learning	shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width,	Spring Construction: Shell structures Task: Create a small herb garden planter	• Select a wider range of tools and techniques for making their product i.e. construction materials and kits, textiles, food ingredients, mechanical components and electrical components. Explain their



• Experience of using different joining, cutting and finishing techniques with paper and card. • A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science. • Familiarity with general purpose software that can be used to draw accurate shapes, such as Microsoft Word, or simple computer-aided design (CAD), such as 2D Primary by Techsoft. Designing • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and the functional and aesthetic purposes of the product. • Develop ideas through the analysis of existing shell structures and use computer-aided design to model and communicate ideas. Making • Plan the order of the main stages of making. • Select and use appropriate tools and software to measure, mark out, cut, score, shape and assemble with some accuracy. • Explain their choice of materials according to functional properties and aesthetic qualities. • Use computer-generated finishing techniques suitable for the product they are creating. Evaluating • Investigate and evaluate a range of shell structures including the materials, components and techniques that have been used. • Test and evaluate their own products against design criteria and the intended user and purpose. Technical knowledge and understanding • Develop and use knowledge of nets of cubes	breadth, capacity marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, sections	Key question: How do I design and construct a purposeful herb planter using a variety of materials and tools? Other questions to explore include: What is the purpose of the shell structure – protecting, containing, presenting? What material is it made from? How has it been constructed? Are the materials recyclable or reusable? How has it been stiffened i.e. folded, corrugated, ribbed, laminated? What size/shape/colour is it? What information does it show and why? How attractive is the design? What do you prefer and why? What style of graphics and lettering might we want to include in our product to meet users' preferences and its intended purpose?	choice of tools and equipment in relation to the skills and techniques they will be using. • Start to understand that mechanical and electrical systems have an input, process and output. • Start to understand that mechanical systems such as levers and linkages or pneumatic systems create movement. Measure, mark out, cut, score and assemble components with more accuracy. • Start to work safely and accurately with a range of simple tools. • Start to think about their ideas as they make progress and be willing to change things if this helps them to improve their work. • Start to measure, tape or pin, cut and join fabric with some accuracy. • Explore, develop and communicate design proposals by modelling ideas. • Start to think about their ideas as they make progress and be willing to change things if this helps them to improve their work. • Measure, mark out, cut, score and assemble components with more accuracy. • Work safely and accurately with a range of simple tools. • Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT. • Evaluate their product against original design criteria e.g. <i>how well it meets its intended purpose</i>
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and cuboids and, where appropriate, more complex 3D shapes. • Develop and use knowledge of how to construct strong, stiff shell structures. • Know and use technical vocabulary relevant to the project.			• Disassemble and evaluate familiar products
Link to other learning • Science topics on plant and on animals and humans • PSHE work on healthy lifestyles Prior learning • Know some ways to prepare ingredients safely and hygienically. • Have some basic knowledge and understanding about healthy eating and <i>The eatwell plate</i>. • Have used some equipment and utensils and prepared and combined ingredients to make a product. Designing • Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. • Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. Making • Plan the main stages of a recipe, listing ingredients, utensils and equipment. • Select and use appropriate utensils and equipment to prepare and combine ingredients.	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet planning, design criteria, purpose, user, annotated sketch, sensory evaluations	Summer Food: a healthy and varied diet Task: Create a healthy snack using salad, meat/cheese/fish in a sandwich or pitta bread Key Question: How do I design and safely make a nutritious, healthy snack using a range of ingredients? Other questions to explore include: What should we do before we work with food? Why is following instructions important? Where and when are the ingredients grown? Where do different meats/fish/cheese/eggs come from? How and why are they processed?	• Start to know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. • Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. • Begin to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Start to understand that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat well plate' Begin to know that to be active and healthy, food and drink are needed to provide energy for the body. • Demonstrate hygienic food preparation and storage. • Evaluate their product against original design criteria e.g. <i>how well it meets its intended purpose</i>



• Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. Evaluating • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. Technical knowledge and understanding • Know how to use appropriate equipment and utensils to prepare and combine food. • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately.			
Year 4			
Link to other learning • Science topics on animals including humans • PSHE work on healthy lifestyles Prior learning • Know some ways to prepare ingredients safely and hygienically. • Have some basic knowledge and understanding about healthy eating and <i>The eatwell plate</i>. • Have used some equipment and utensils and prepared and combined ingredients to make a product. Designing	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned,	Autumn Food: a healthy and varied diet Task: Prepare a casserole dish such as a winter stew or prepare and create a soup from around the world e.g. minestrone, tarka Dahl, Chinese chicken and sweetcorn Key Question: How do I design and safely prepare a nutritious, healthy, hot meal using a range of ingredients? Other questions to explore include: What ingredients have been used? Which food groups do they belong to?	• Understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. • Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. • Know how to use a range of techniques such as peeling, chopping, slicing, grating,



• Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. • Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. Making • Plan the main stages of a recipe, listing ingredients, utensils and equipment. • Select and use appropriate utensils and equipment to prepare and combine ingredients. • Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. Evaluating • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. Technical knowledge and understanding • Know how to use appropriate equipment and utensils to prepare and combine food. • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately.	processed, seasonal, harvested healthy/varied diet planning, design criteria, purpose, user, annotated sketch, sensory evaluations	What substances are used in the products e.g. nutrients, water and fibre? What should we do before we work with food? Why is following instructions important? What should we do before we work with food? Why is following instructions important?	mixing, spreading, kneading and baking. • Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat well plate' Know that to be active and healthy, food and drink are needed to provide energy for the body. • Evaluate their work both during and at the end of the assignment
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Link to other learning • Science work on properties of materials Prior learning • Have joined fabric in simple ways by gluing • Have used simple patterns and templates for marking out. • Have evaluated a range of textile products. Designing • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. • Produce annotated sketches, prototypes, final product sketches and pattern pieces. Making • Plan the main stages of making. • Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing. • Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern. Evaluating • Investigate a range of 3-D textile products relevant to the project. • Test their product against the original design criteria and with the intended user. • Take into account others' views. • Understand how a key event/individual has influenced the development of the chosen product and/or fabric. Technical knowledge and understanding • Know how to strengthen, stiffen and reinforce existing fabrics.	fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces	Spring Textiles : 3D product Task: Make a purse or pencil case. Key question: How do I design and create a purposeful and appealing purse or pencil case using fabrics and tools? Other questions to explore include: What is its purpose? Which one is most suited to its purpose? What properties/characteristics does the fabric have? Why has this fabric been chosen? How has the fabric been joined together? How effective are its fastenings? How has it been decorated? Does its decoration have a purpose? What would the 2-D pattern piece look like? What are its measurements? How might you change the product?	• Start to generate ideas, considering the purposes for which they are designing- link with Mathematics and Science. Confidently make labelled drawings from different views showing specific features. • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail. • Identify the strengths and areas for development in their ideas and products. When planning consider the views of others, including intended users, to improve their work. • Make labelled drawings from different views showing specific features. • Evaluate products and identify criteria that can be used for their own designs. • Evaluate their work both during and at the end of the assignment • Evaluate their products carrying out appropriate tests
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• Understand how to securely join two pieces of fabric together. • Understand the need for patterns and seam allowances. • Know and use technical vocabulary relevant to the project.			
Link to other learning • Science topics on everyday materials and on forces • History – Tudor animals Prior learning • Explored simple mechanisms, such as sliders and levers, and simple structures. • Learnt how materials can be joined to allow movement. • Joined and combined materials using simple tools and techniques. Designing • Generate realistic and appropriate ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. Making • Order the main stages of making. • Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons. • Select from and use finishing techniques suitable for the product they are creating.	components, fixing, attaching, tubing, syringe, plunger, split pin, paper fastener pneumatic system, input movement, process, output movement, control, compression, pressure, inflate, deflate, pump, seal, air-tight linear, rotary, oscillating, reciprocating user, purpose, function, prototype, design criteria, innovative, appealing, design brief, research, evaluate, ideas, constraints, investigate	Summer: Mechanisms: Pneumatics Task: To construct moving animal using a range of materials and tools. (Tudor animals) Key question: How do I use pneumatics to construct a small animal toy that has moving parts? Other questions to explore include: How can air be used to move heavy objects? What is its purpose? What part moved and how did it move? What materials have been used? How effective do you think it is and why? What else could move? (See moving monsters project)	• Select a wider range of tools and techniques for making their product safely. • Know how to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. • Start to join and combine materials and components accurately in temporary and permanent ways. • Know how mechanical systems such as cams or pulleys or gears create movement. • Understand how more complex electrical circuits and components can be used to create functional products. • Understand how to reinforce and strengthen a 3D framework. • Begin to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT. • Evaluate products and identify criteria that can be used for their own designs. • Use simple graphical communication techniques. • Evaluate their work both during and at the end of the assignment • Evaluate their products carrying out appropriate tests



Evaluating - Investigate and analyse books, videos and products with pneumatic mechanisms. - Evaluate their own products and ideas against criteria and user needs, as they design and make. Technical knowledge and understanding - Understand and use pneumatic mechanisms. - Know and use technical vocabulary relevant to the project.			
Year 5			
Link to other learning - History topic on early Islamic civilisations Prior learning - Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. - Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients. Designing - Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. - Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.	ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble design specification, innovative, research, evaluate, design brief	Autumn Food: Celebrating culture and seasonality using food Task: Bake a simple savoury samosa. Key Question: How do I design, safely prepare and evaluate a nutritious, savoury food item using a range of ingredients? Other questions to explore include: What ingredients are sourced locally/in the UK/from overseas? What are the key ingredients needed to make a particular product? How have ingredients been processed? What is the nutritional value of a product? What ingredients help to make the product spicy/crisp/crunchy etc? What is	- Understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. - Begin to understand that seasons may affect the food available. - Understand how food is processed into ingredients that can be eaten or used in cooking. - Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. - Start to understand how to use a range of techniques such as peeling, chopping, slicing,



• Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. Making • Write a step-by-step recipe, including a list of ingredients, equipment and utensils • Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. • Make, decorate and present the food product appropriately for the intended user and purpose. Evaluating • Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. • Understand how key chefs have influenced eating habits to promote varied and healthy diets. Technical knowledge and understanding • Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary.		the impact of added ingredients/finishes/shapes on the finished product?	grating, mixing, spreading, kneading and baking. • Begin to understand that different food and drink contain different substances – nutrients, water and fibre – that are needed for health. • Weigh and measure accurately (time, dry ingredients, liquids) • Apply the rules of basic food hygiene and other safe principles e.g. <i>hazards relating to the use of ovens</i> • Evaluate a product against the original design specification • Evaluate it personally and seek evaluation from others
Link to other learning • Science topic on forces	reed switch, toggle switch, push-to-make switch, push-to-break	Spring	• Start to generate, develop, model and communicate their



• Computing topics • History – Victorian toys Prior learning • Initial experience of using computer control software and an interface box, a standalone box or microcontroller, e.g. Crumble. • Some experience of writing and modifying a program to make a light turn on or flash on and off. • Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product. Designing • Develop a design specification for a functional product that responds automatically to changes in the environment. • Generate, develop and communicate ideas through discussion, annotated sketches and pictorial representations of electrical circuits or circuit diagrams. Making • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. • Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. • Create and modify a computer control program to enable their electrical product to respond to changes in the environment. Evaluating • Continually evaluate and modify the working features of the product to match the initial design specification. • Test the system to demonstrate its effectiveness for the intended user and purpose.	switch, light dependent resistor (LDR), tilt switch light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series circuit, parallel circuit function, innovative, design specification, design brief, user, purpose	Electrical systems: monitoring and control Task: Investigate and compare a range of children's electrical toys and write a report on how one could be modified to make it better or more appealing Key question: How do I investigate, compare and evaluate the features of some electrical toys against design criteria? Other questions to explore include: Why is a computer control program used to operate the products? What are the advantages of using computer control? What input devices, e.g. switches, and output devices, e.g. bulbs and buzzers, have been used? Who have the products been designed for and for what purpose?	ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces. • Generate ideas through brainstorming and identify a purpose for their product. • Draw up a specification for their design. • Begin to use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. • With growing confidence apply a range of finishing techniques, including those from art and design. • Draw up a specification for their design- link with Mathematics and Science. • Use results of investigations, information sources, including ICT when developing design ideas. • With growing confidence select appropriate materials, tools and techniques. • Start to understand how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose. • Use results of investigations, information sources, including ICT when developing design ideas. • Evaluate a product against the original design
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Technical knowledge and understanding • Understand and use electrical systems in their products. • Understand the use of computer control systems in products. • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to the project.			specification • Evaluate it personally and seek evaluation from others
Link to other learning • Science topic on everyday materials • PE - swimming Prior learning • Experience of stitching, joining and finishing techniques in textiles. • Experience of making and using textiles pattern pieces. • Experience of simple computer-aided design applications. Designing • Generate innovative ideas through research including surveys, interviews and questionnaires. • Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes including using computer-aided design. • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. Making • Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team.	computer aided design (CAD), computer aided manufacture (CAM) font, lettering, text, graphics, menu, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces names of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper annotate, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype	Summer Textiles: Using Computer Aided Designs (CAD) Task: Design and make a functional swimming bag Key question: How do I design, make and evaluate a creative, innovative and functional swimming bag? Other questions to explore include: Is the product functional or decorative? Who would use this product? What is its purpose? What design decisions have been made? Do the textiles used match the intended purpose? How has it been made? What has been used to enhance the appearance? Is the design innovative?	• Confidently select appropriate tools, materials, components and techniques and use them. • Use tools safely and accurately. Assemble components to make working models. Aim to make and to achieve a quality product. • Demonstrate when make modifications as they go along. Construct products using permanent joining techniques. Understand how mechanical systems such as cams or pulleys or gears create movement • Know how to reinforce and strengthen a 3D framework. • Generate ideas through brainstorming and identify a purpose for their product. • Draw up a specification for their design. • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods if the first attempts fail.



• Select from and use a range of tools and equipment, including CAD, to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. Evaluating • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. Technical knowledge and understanding • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate.			• Cut and join with accuracy to ensure a good quality finish to the product. • Evaluate a product against the original design specification • Evaluate it personally and seek evaluation from others
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Year 6

Link to other learning • Geography topic on theme parks around the world • Science electricity and forces Prior learning • Experience of axles, axle holders and wheels that are fixed or free moving. • Basic understanding of electrical circuits, simple switches and components.	pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor circuit, switch, circuit diagram annotated drawings, exploded diagrams mechanical system, electrical system, input, process, output	Autumn Mechanical systems: pulleys or gears Task: Design and build a model of a roller coaster Key question: What are the features of a roller coaster and how do I design and make and evaluate a simple working model?	• Select appropriate materials, tools and techniques e.g. cutting, shaping, joining and finishing, accurately. • Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.
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• Experience of cutting and joining techniques with a range of materials including card, plastic and wood. • An understanding of how to strengthen and stiffen structures. Designing • Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide their thinking. Making • Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. Evaluating • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. • Investigate famous manufacturing and engineering companies relevant to the project. Technical knowledge and understanding • Understand that mechanical and electrical systems have an input, process and an output. • Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.	design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief	Other questions to explore include: How innovative is the product? What design decisions have been made? What type of movement can be seen? What types of mechanical components are used and where are they positioned? What are the input, process and output of the system? How well does the product work? Why have the materials and components been chosen? How well has it been designed? How well has it been made?	• Understand how mechanical systems such as cams or pulleys or gears create movement. • Demonstrate how to use skills in using different tools and equipment safely and accurately with growing confidence cut and join with accuracy to ensure a good-quality finish to the product. Weigh and measure accurately (time, dry ingredients, liquids). • Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT. • Communicate their ideas through detailed labelled drawings. • Develop a design specification. • Assemble components, make working models. • Use tools safely and accurately. • Construct products using permanent joining techniques. • Make modifications as they go. • Achieve a quality product. • Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate against their original criteria and suggest ways that their product could be improved
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• Know and use technical vocabulary relevant to the project.			
Link to other learning • History WW2 • Science – properties and materials Prior learning • Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials. • Basic understanding of what structures are and how they can be made stronger, stiffer and more stable. Designing • Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. • Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. Making • Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. • Use finishing and decorative techniques suitable for the product they are designing and making. Evaluating	frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional	Spring Construction: Frame structures Task: Design, construct and evaluate a model air raid shelter Key Question How do I design, create and evaluate a structured, functional shelter that would withstand weight? Other questions to explore include: How well does the frame structure meet users' needs and purposes? Why were materials chosen? What methods of construction have been used? How has the framework been strengthened, reinforced and stiffened? How does the shape of the framework affect its strength? How innovative is the design? When was it made? Who made it? Where was it made?	• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces. • Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. • Accurately apply a range of finishing techniques, including those from art and design. • Draw up a specification for their design- link with Mathematics and Science. Plan the order of their work, choosing appropriate materials, tools and techniques. • Suggest alternative methods of making if the first attempts fail. Identify the strengths and areas for development in their ideas and products. • Know how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose. • Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways. • Plan the order of their work, choosing appropriate materials, tools and techniques. • Evaluate their products,



- Investigate and evaluate a range of existing frame structures. - Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. - Research key events and individuals relevant to frame structures. Technical knowledge and understanding - Understand how to strengthen, stiffen and reinforce 3-D frameworks. - Know and use technical vocabulary relevant to the project.			identifying strengths and areas for development, and carrying out appropriate tests - Record their evaluations using drawings with labels - Evaluate against their original criteria and suggest ways that their product could be improved
Link to other learning - PSHE topic on healthy lifestyles - Previous learning – geography UK Prior learning - Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. - Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients. Designing - Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. - Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. - Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.	ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs design specification, innovative, research, evaluate, design brief	Summer Food: Celebrating culture and seasonality Task: Investigate, research, design, make and an English summer dessert Key question: How do I design, prepare and evaluate a delicious dessert? (Eaton Mess) Other questions to explore include: What ingredients are sourced locally/in the UK/from overseas? What are the key ingredients needed to make a particular product? How have ingredients been processed? What is the nutritional value of a product? What ingredients help to make the product spicy/crisp/crunchy etc? What is the impact of added ingredients/finishes/shapes on the finished product?	- Know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. - Understand that seasons may affect the food available. - Understand how food is processed into ingredients that can be eaten or used in cooking. - Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. - Understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. Know different food and drink contain different substances – nutrients, water



Making • Write a step-by-step recipe, including a list of ingredients, equipment and utensils • Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. • Make, decorate and present the food product appropriately for the intended user and purpose. Evaluating • Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. • Understand how key chefs have influenced eating habits to promote varied and healthy diets. Technical knowledge and understanding • Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary.		(links to Wimbledon etc)	and fibre – that are needed for health. • Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate against their original criteria and suggest ways that their product could be improved
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