

Design and Technology – Knowledge and Skills Progression

Relevant statements from EYFS Framework matching the programme of study for D and T

	NURSERY	RECEPTION	EARLY LEARNING GOALS
Personal, Social and emotional development	<ul style="list-style-type: none"> • Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them. 		
Physical Development	<ul style="list-style-type: none"> • Use large-muscle movements • Choose the right resources to carry out their own plan. • Use one-handed tools and equipment, for example, making snips in paper with scissors. 	<ul style="list-style-type: none"> • Progress towards a more fluent style of moving, with developing control and grace. • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. • Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor. 	<ul style="list-style-type: none"> • Use a range of small tools, including scissors, paintbrushes and cutlery (fine motor)
Understanding the World	<ul style="list-style-type: none"> • Explore how things work. 		
Expressive Arts and Design	<ul style="list-style-type: none"> • Make imaginative and complex 'small worlds' with blocks and construction kits, • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Create closed shapes with continuous lines, and begin to use these shapes to represent objects. 	<ul style="list-style-type: none"> • Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills 	<ul style="list-style-type: none"> • 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 (creating with materials)

NATIONAL CURRICULUM KS1 and KS2

Designing	Making	Evaluating	Technical Knowledge	Food Technology
YEAR 1				
	Autumn: Mechanical systems: Moving Toys	Spring: Structures: Castles		Summer: Food: Fruit salad /kebab/smoothie for Market Day
Key knowledge	<ul style="list-style-type: none"> • That different mechanisms (sliders and levers) produce different types of movement and develop their use of technical vocabulary. • Understand the steps needed to make their moving toy. • That products are designed for users based on criteria and consider the criteria for their products • That the mechanism should work smoothly and should make the right type of movement. 	<ul style="list-style-type: none"> • Learn about working to a brief and design a castle replica that is freestanding. • Know how to make structures stronger and stiffer. • Know that a range of tools can be used for different purposes such as cutting, sticking, curling, bending and joining. 		<ul style="list-style-type: none"> • Understand the importance of washing hands and fruit before it is prepared and eaten. • Know the purpose of different utensils. • Learn about the importance of fruit as an essential part of a balanced diet and about nutrition. • Children learn about seeds and the difference between fruits and vegetables. • They learn about fruit-based dishes, and what a kebab /smoothie is. • Children learn that they can use their senses to evaluate food.
Key skills	<ul style="list-style-type: none"> • Generating own ideas based on design criteria and experiences • Developing, modelling and communicating ideas, through mock ups with card and paper. • Planning and suggesting steps in the creation phase. • Selecting and using tools, explaining choices, to cut, shape and join paper and card. 	<ul style="list-style-type: none"> • Exploring initial ideas using drawings and mock-ups • Selecting and using a range of materials and components, such as paper, card, plastic and wood according to their characteristics. • Finding out how to join components together effectively • Building structures by selecting appropriate materials and investigating ways to strengthen them. • Evaluating ideas against original criteria. 		<ul style="list-style-type: none"> • Designing appealing products for a particular user based on simple design criteria (to sell to parents at Market day). • Generating initial ideas and design criteria through investigating a variety of fruit. • Communicating ideas through talk and drawings. • Using simple utensils and equipment to peel, cut, slice, squeeze, grate and chop safely. • Selecting from a range of fruit according to their characteristics to create a chosen product. • Tasting and evaluating a range of fruit to determine the intended user's preferences. • Evaluating ideas and finished products against design criteria, including intended user and purpose. • Using the basic principles of a healthy and varied diet to prepare dishes, understanding where food comes from.

YEAR 2

	Autumn: Food: Pease Pudding	Spring: Mechanical systems: Jungle jeep	Summer: Textiles: Puppets
Key Knowledge	<ul style="list-style-type: none"> Find out about the purpose of further utensils they can use to prepare food. Learn how to wash, peel, grate and slice vegetables. Learn about growing a wider range of vegetables from seed and how these can be prepared for eating. Learn that some ingredients are easier to acquire according to the season. Learn about food groups and the source of some different foods. 	<ul style="list-style-type: none"> Learn about the difference between fixed and freely moving axles and develop their use of associated technical vocabulary. Understand that the product they are creating will have a specific purpose. Learn what components are needed and make informed choices about the selection of materials. 	<ul style="list-style-type: none"> Learn about the equipment needed to sew material together, learning and using associated vocabulary; seam, thread, stitch.
Key Skills	<ul style="list-style-type: none"> Planning and preparing a dish of nutritional value. Preparing a meal safely, using a range of equipment appropriately. Making and presenting food in an aesthetically pleasing way and evaluating the success of their own and others' dishes, involving critique of how dishes could be improved. Using a range of methods of food preparation. Using the basic principles of a healthy and varied diet to prepare dishes, understanding where food comes from. 	<ul style="list-style-type: none"> Designing a vehicle considering its purpose – jungle jeep Selecting the materials and tools required. Planning sequence of making the body, attaching the axle and decorating the vehicle. Testing the product – can it move freely/carry a weight? Improving the design. Evaluating the product. 	<ul style="list-style-type: none"> Designing and creating a puppet, Sewing the material together effectively at the seams. Use running stitch Threading and using a needle safely. <p>Evaluating own and each other's product(s) against the design criteria</p>

KS1 End Points

Is able to design purposeful, functional, appealing products for themselves and other users based on design criteria. Can generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.	Is able to select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Can select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.	Can explore and evaluate a range of existing products evaluate their ideas and products against design criteria.	Can 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.	Uses the basic principles of a healthy and varied diet to prepare dishes, understanding where food comes from.
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YEAR 3

	Autumn: Structures: Roman chariots	Spring: Food: Sandwiches	Summer: Textiles: 2D shape to 3D product Purses/wallets
Key knowledge	<ul style="list-style-type: none"> Learn about the chariots used in Ancient Rome and in particular their use in races Identify the key design features Children build on their existing knowledge of mechanisms and learn about wheels and axels in the context of their design brief. 	<ul style="list-style-type: none"> Children learn about the purpose of different kitchen tools and which to select for use in preparing food (e.g. colander, sieve, spatula, peeler) The children develop their knowledge of how vegetables are grown from seed and can be prepared for eating (including peeling, chopping, steaming and boiling) Children learn that some ingredients are easier to acquire according to the season. Know the food groups 	<ul style="list-style-type: none"> Children find out how to specify a design to make it more appealing to a specific target group. Learn different types of stitches for the purpose of functionality and aesthetics. Know and use technical vocabulary relevant to the project. <ul style="list-style-type: none"> Know how to evaluate their product against the product criteria they have individually generated as a means to improve their work.
Key Skills	<ul style="list-style-type: none"> Using research to inform the design criteria for a structure suitable to the context of an era. Investigating the construction of existing structures and evaluating their own ideas against design criteria. Using existing designs to inform own and communicate ideas through discussion, annotated sketches, cross-sectional diagrams and computer aided design (word.doc with shape manipulation). Accurately measuring the lengths of square-section wood, sawing and smoothing ends with sandpaper. Building and reinforcing a rectangular frame with triangles. Reinforcing axles with bearings securing axle holders and checking that wheels move freely. Assessing and addressing potential weaknesses and applying knowledge of strengthening, reinforcing and stiffening. Critically evaluate the quality of the design, manufacture, functionality, innovation and fitness for purpose, throughout the process and when the final product is in use, referring back to the design criteria. 	<ul style="list-style-type: none"> Planning and preparing a dish of nutritional value. Preparing a dish safely, using a range of equipment appropriately for different purposes, including peeling, chopping, steaming and boiling). <ul style="list-style-type: none"> Prepare food- wash, peel, slice and grate vegetables. Making and presenting food in an aesthetically pleasing way and evaluating the success of their own and others' dishes involving critique of how dishes could be improved. 	<ul style="list-style-type: none"> Designing and making a functional purse or wallet, with a fastening, communicating initial ideas through annotated sketches. Using research into the features of an appealing product to inform design criteria. Selecting and using a range of tools to perform practical tasks; stitching and sewing (joining), cutting and systematically working through phases of a design. Investigating the effect of different stitches in joining seams and how they contribute to the overall effectiveness and durability Evaluating the outcome with reference to own design criteria.

YEAR 4

	<u>Autumn:</u> Food: Dips and dippers	<u>Spring:</u> Electrical Systems: Simple circuits and switches Light it up	<u>Summer:</u> Mechanical systems: Pneumatic toy
Key knowledge	<ul style="list-style-type: none">• Learn about how a variety of ingredients are grown, reared, caught and processed, deepening their understanding of organic and free-range practices.• Learn the importance of hygiene practices when handling food, including the use of separate chopping boards for meat, washing equipment and hands (micro-organism awareness).	<ul style="list-style-type: none">• Know how to make an electrical circuit	<ul style="list-style-type: none">• Learn that air is used to help some mechanisms move and understand flow/direction of air• Understand the basic working principle of a syringe

- Selecting and using a range of utensils, including knives, chopping boards, weighing
- scales, measuring jugs and baking trays.
- Selecting and using a range of healthy ingredients, such as breads, fruits,
- vegetables and spreads (considering and giving reasons for choices).
- Reviewing which dishes were most popular and using this as a means to evaluate own dish and suggest improvements, reviewing work against own design criteria, including aspects such as presentation, food combinations, popularity and healthiness

- Responding to a brief.
- Using research and developing design criteria to inform the design of innovative, functional, appealing product that are fit for purpose, aimed at particular individuals or groups
- Sketching and annotating a plan of their planned product
- Making a product which contains a working circuit
- Using exploded diagrams to support the design process.
- Writing a step by step set of instructions to follow for building their product including the tools and materials.
- Selecting materials and tools required
- Understanding the importance of evaluating products and can discuss their work and the work of others fairly

- Investigating, analysing and evaluating familiar objects that use air to make them work and considering how this can be applied on a larger scale involving heavier objects
- Constructing and investigating a simple pneumatic system
- Generating realistic and appropriate ideas and their own design criteria through discussion, focusing on the needs of the user. Using annotated sketches and prototypes to develop, model and communicate ideas.
- Ordering the main stages of a production process. Selecting from and using appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons.
- Selecting and using finishing techniques suitable for the product being created.
- Investigating and analysing books, videos and products with pneumatic mechanisms. Evaluating own products and ideas against criteria and user needs.
- Understanding and using pneumatic mechanisms. Knowing and using technical vocabulary relevant to the project.
- They will explore three systems: a) balloon connected to a washing-up liquid bottle. b) two syringes of the same size connected together. c) two syringes of different sizes connected together.
- They will design and make a moving toy using a pneumatic mechanism

YEAR 5

	Autumn: Electrical Systems: More complex switches and circuits Security Alarm system	Spring: Food: Making Bread	Summer: Structures: Bridges
Key knowledge	<ul style="list-style-type: none"> Learn about, understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs, buzzers and motors 	<ul style="list-style-type: none"> Learn about the benefits of whole grain flour, opposed to a plain flour and the reasons why some types of bread, such as wholemeal, are healthier than others and can be a source of carbohydrate in a healthy balanced diet. Learn that a wheat grain is a seed, how it is harvested and ground at a mill to make flour. Learn about the influence of specific manufacturers and consider the importance and usefulness of market research in this context. Learn about the importance of clear and accurate food labelling and knowledge of ingredients, with particular reference to food allergies. Learn about the different tools and ingredients typically involved in breadmaking and the steps involved in the breadmaking process. 	<ul style="list-style-type: none"> Learn about the different types of bridge, including: beam, arch, cable-stayed, suspension, cantilever Learn about famous bridges and their engineers. Learn that different materials and components can be used, including steel, brick, wood, iron and rivets. Develop knowledge of how to work safely, using tools and equipment. Learn how the design of specific bridges makes them particularly successful, considering their purpose. Children learn how the use of cross-sectional and exploded diagrams, prototypes, pattern pieces can support the design process overall.
Key skills	<ul style="list-style-type: none"> Using research and develop design criteria to inform the design of innovative, functional, appealing product that are fit for purpose, aimed at particular individuals or group Generating, developing, modelling and communicating their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes and pattern Making a product which contains a working circuit to sound an alarm Writing a step by step set of instructions to follow for building their product including the tools and materials. Evaluating their product 	<ul style="list-style-type: none"> Evaluating a range of bread, through taste, to inform own design criteria which children subsequently review their own product against, considering appearance, flavour, texture and ingredients. Recording evaluative data in a table to support comparison Carrying out and articulating the findings of research carried out in groups. Reviewing, considering and suggesting ways in which a recipe could be adapted to be made healthier (e.g. recipes involving white flour/salt/sugar) Preparing and baking a savoury dish, using specific techniques for purpose. 	<ul style="list-style-type: none"> Evaluating an existing bridge to inform plans and structures. Comparing the strengths of different shaped frameworks within structures Learn how to strengthen a structure with different materials and how to assess the quality of the materials being used to create a structure Sketching and annotating a plan of their planned bridge Using exploded diagrams to support the design process. Writing a step by step set of instructions to follow for building their bridge, including the tools and materials. Evaluating different materials and their suitability for use in a bridge. Accurately join frameworks using appropriate and robust joins Work in a team to plan and build a bridge structure. Building a bridge following a plan accurately. Evaluating a completed project considering how successful their bridge is according to the original brief.

YEAR 6

	<u>Autumn:</u> Textiles: Combining different fabric shapes <i>Make do and mend</i> cushions	<u>Spring:</u> Food: Celebrating culture and seasonality Mexican burritos	<u>Summer:</u> Dragon's Den
Key knowledge	<ul style="list-style-type: none"> Learn about reusing materials - WW11 link. Know products have a target audience 	<ul style="list-style-type: none"> Learn about seasonality and Fairtrade Learn the origins of the burrito and European influence Know that food packaging includes information on calorific and allergies 	<ul style="list-style-type: none"> Children will respond to the brief, " Design a product to be sold at the Summer Fair". Responding to a brief to meet needs of identified customers That responses to a survey can inform the design phase of a product That making products has costs and manufacturers usually want to make a profit Learn that designers often have to persuade investors That products often have a logo
Key skills	<ul style="list-style-type: none"> Using research and develop design criteria to inform the design of innovative, functional, appealing product that are fit for purpose, aimed at particular individuals or group Use a wider range of materials and components, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components Accurately measure to nearest mm, mark out, cut and shape materials and components Accurately assemble, join and combine materials/ components Accurately apply a range of finishing techniques, including those from art and design Using techniques that involve a number of steps Demonstrating resourcefulness, e.g. make refinements Following procedures for safety 	<ul style="list-style-type: none"> Generating developing , modelling and communicating their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Follow procedures for safety Use a wider range of materials and components, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components Accurately assemble, join and combine materials/ components Use techniques that involve a number of steps Demonstrate resourcefulness, e.g. make refinements Researching calorific content of different types of burrito and consider which is most nutritious Examine advice on nutrition and allergies on packaging Making tortillas Selecting and combining ingredients for a healthy burrito Evaluating tortillas and burritos Understand and can apply the principles of a healthy and varied diet. Preparing and cooking a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality and know where and how a 	<ul style="list-style-type: none"> Make design decisions, taking account of constraints such as time, resources and cost Using research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Generating, developing, modelling and communicating their ideas through discussion, annotated sketches, cross sectional and exploded diagrams, prototypes, pattern pieces Investigating and analysing a range of existing products. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Selecting from and using a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Investigating how much products cost to make, how innovative products are and how sustainable the materials in products are

	<ul style="list-style-type: none"> Selecting from and using a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Selecting from and using a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], 	<p>variety of ingredients are grown, reared, caught and processed.</p>	
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KS2 End Points				
<p>Can use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.</p> <p>Is able to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p>	<p>Is able to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing],</p> <p>Can accurately select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.</p>	<p>Is able to investigate and analyse a range of existing products.</p> <p>Can evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>Understands how key events and individuals in design and technology have helped shape the world.</p>	<p>Applies their understanding of how to strengthen, stiffen and reinforce more complex structures.</p> <p>Understands and can use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].</p> <p>Understands and can use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].</p> <p>Applies their understanding of computing to program, monitor and control their products.</p>	<p>Understands and can apply the principles of a healthy and varied diet.</p> <p>Can prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.</p>