



Knowledge and Skills Progression
Subject area: Design and Technology skills

National Curriculum Statements

Key Stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Technical knowledge

- 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.

Key Stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate

- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- understand how key events and individuals in design and technology have helped shape the world

Technical knowledge

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

			<ul style="list-style-type: none"> apply their understanding of computing to program, monitor and control their products. 	
Knowledge and Skills	EYFS	KS1	LKS2	UKS2
Design	Expressive Art and Design - Creating with Materials ELG: <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. 	<p>To work confidently within a range of contexts, such as the home, school, gardens, playgrounds, local community, industry, and the wider environment.</p> <p>To understand who their product is for (either themselves or other users).</p> <p>To follow simple design criteria to help develop their ideas. (My product must...)</p> <p>To use knowledge of existing products to help come up with ideas.</p> <p>To develop and communicate ideas by talking and drawing.</p> <p>To model ideas by using construction kits and making mock-ups and templates.</p> <p>To use information and communication technology, where appropriate to communicate ideas.</p>	<p>To work confidently within a range of contexts, such as the home, school, gardens, playgrounds, local community, industry, and the wider environment.</p> <p>To identify the design features of their product that will appeal to the intended user.</p> <p>To carryout research to find out the needs and wants of the user.</p> <p>To develop their own design criteria (with support) and use these to inform their ideas. (My product must... My product could...)</p> <p>To share and clarify ideas through discussion.</p> <p>To use annotated sketches to communicate their ideas.</p> <p>To use prototypes and pattern pieces.</p> <p>To make design decisions that take account of the availability of resources and focus on being environmentally friendly.</p> <p>To use information and communication technology, where appropriate to communicate ideas.</p>	<p>To work confidently within a range of contexts, such as the home, school, gardens, playgrounds, local community, industry, and the wider environment.</p> <p>To identify the design features of their product that will appeal to the intended user.</p> <p>To carryout research, using surveys, interviews, questionnaires and web-based resources to find out the needs and wants of the user.</p> <p>To develop their own design criteria and use these to inform their ideas.</p> <p>To share and clarify ideas through discussion.</p> <p>To use annotated sketches, cross-sectional drawings and exploded diagrams to communicate their ideas.</p> <p>To use prototypes and pattern pieces.</p> <p>To make design decisions that take account of the availability of resources and focus on being environmentally friendly.</p> <p>To use computer-aided design to develop and communicate their ideas.</p>
Make	Physical Development <ul style="list-style-type: none"> Use a range of small tools, including scissors, paintbrushes and cutlery. 	<p>To plan by suggesting what to do next.</p> <p>To select from a range of tools and equipment, explaining their choices.</p> <p>To select from a range of materials and components according to their characteristics.</p> <p>To follow procedures for safety and hygiene.</p> <p>To be mindful of the environment when choosing and using materials, producing the least amount of waste possible.</p> <p>To use construction kits, textiles, food ingredients and moving mechanisms.</p> <p>To cut, shape and join materials and use finishing techniques to enhance the appearance of the product.</p> <p>To show resilience when things go wrong and learn from mistakes.</p>	<p>To order the main stages of making.</p> <p>To select tools and equipment for the task and explain their choices.</p> <p>To select materials suitable for the task and explain their choices according to functional properties and aesthetic qualities.</p> <p>To follow procedures of safety and hygiene.</p> <p>To be mindful of the environment when choosing and using materials, producing the least amount of waste possible.</p> <p>To use construction kits, textiles, food ingredients and mechanical components and electrical components.</p> <p>To measure, mark out, cut, shape and join materials with some accuracy and use finishing techniques to enhance the appearance of the product.</p> <p>To demonstrate resourcefulness and resilience when tackling practical problems</p>	<p>To formulate step-by-step plans as a guide to making.</p> <p>To select tools and equipment for the task and explain their choices.</p> <p>To select materials suitable for the task and explain their choices according to functional properties and aesthetic qualities.</p> <p>To follow procedures of safety and hygiene.</p> <p>To be mindful of the environment when choosing and using materials, producing the least amount of waste possible.</p> <p>To use construction kits, textiles, food ingredients and mechanical components and use computing to program, monitor and control their products.</p> <p>To measure, mark out, cut, shape and join materials with some accuracy and use finishing techniques to enhance the appearance of the product.</p> <p>To use techniques that involve a number of steps.</p> <p>To demonstrate resourcefulness and resilience when tackling practical problems</p>
Evaluate	Expressive Art and Design -	To explore and evaluate a range of existing products.	To carryout research to investigate and analyse how other similar products have been made.	To carryout research to investigate and analyse how other similar products have been made.

	<p>Creating with Materials ELG:</p> <ul style="list-style-type: none"> Share their creations, explaining the process they have used. 	<p>To evaluate their ideas and finished product against the design criteria. To suggest how their product could be improved.</p>	<p>To explore how key events and individuals in design and technology have helped shape the world. The origins of pneumatics can be traced back to the first century when ancient Greek mathematician Hero of Alexandria wrote about his inventions powered by steam or the wind. To evaluate their ideas and product against their own design criteria and consider the views of others to improve their work.</p>	<p>To explore how key events and individuals in design and technology have helped shape the world. The origin of the Faberge Egg, Archimedes of Syracuse invented the first compound pulleys 287 BC - 212 BC. Gears appear in works connected to Hero of Alexandria, in Roman Egypt circa AD 50, but can be traced back to the mechanics of the Alexandrian school in 3rd-century BC Ptolemaic Egypt, and were greatly developed by the Greek polymath Archimedes (287–212 BC). To evaluate their ideas and product against their own design criteria and consider the views of others to improve their work. To work out how much products cost to make.</p>
<p>Technical knowledge</p>		<p>To explore and use mechanisms, such as spinners, sliders, wheels and axles in their products. To build structures, exploring how they can join materials and make them stronger stiffer and more stable. To use sewing techniques to join two identical fabric shapes. To prepare a healthy dish, using cutting, peeling, rolling and mixing skills.</p>	<p>To understand and use a pneumatic system to create movement. To understand and use electrical systems in their products, using series circuits incorporating switches, bulbs, buzzers and motors. To apply their understanding of how to strengthen, stiffen and reinforce their structures and design their own stand, enabling the structure to stand independently. To use a range of sewing techniques to produce a container from a chosen pattern. To prepare healthy, predominantly savoury dishes using a range of techniques including: chopping, mixing, kneading and baking</p>	<p>To understand how gears, pulleys, cams and levers work. Choose one of these to make a moving part. To apply their understanding of how to strengthen, stiffen and reinforce a 3D structure, designing their own display case with lid. To use a range of sewing techniques to produce a sock monster. To prepare healthy, predominantly savoury dishes using a range of techniques including: chopping, peeling, slicing, mixing and grating. To program a computer to monitor and control their product.</p>
<p>Cooking and nutrition</p> <p>As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.</p>				
<p>Key Stage 1</p> <ul style="list-style-type: none"> use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from. 		<p>Key Stage 2</p> <ul style="list-style-type: none"> understand and apply the principles of a healthy and varied diet prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. 		
<p>Cooking and nutrition</p>		<p>To understand that all food comes from plants or animals. To understand that food has to be farmed, grown or caught. To begin to recognise the five food groups in The Eatwell Plate.</p>	<p>To understand food is grown, reared and caught in the UK, Europe and the wider world. To understand a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Plate.</p>	<p>To understand food is grown, reared and caught in the UK, Europe and the wider world. To understand that seasons may affect the food available.</p>

		To understand that everyone should eat at least five portions of fruit and vegetables every day. To produce simple, healthy, dishes safely and hygienically.	To understand that to be active and healthy, food and drink are needed to provide energy for the body. To prepare healthy, predominantly savoury dishes using a range of techniques including: chopping, mixing, kneading and baking. To produce healthy dishes safely and hygienically, where appropriate using a heat source	To understand a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Plate. To understand that to be active and healthy, food and drink are needed to provide energy for the body. To prepare healthy, predominantly savoury dishes using a range of techniques including: chopping, peeling, slicing, mixing and grating. To produce healthy dishes safely and hygienically, where appropriate using a heat source.
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Vocabulary

Year group	EYFS	KS1	LKS2	UKS2
Mechanisms	Review, safe, unsafe, size, shape, think, small, large	Sliders, levers, pivot, slot, bridge, guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards, Vehicle, wheel, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism	Mechanism, lever, linkages, pivot, slot, bridge, guide, system, input, process, output, linear, rotary, oscillating, reciprocating, components, fixing, attaching, tubing, syringe, plunger, split-pin, paper fastener, pneumatic system, input movement, output movement, control, compression, pressure, inflate, deflate, pump, seal, air-tight	Pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagram, mechanical system, electrical system, input, process, output, Cam, snail cam, off-centre cam, pear shaped cam, follower, axle, shaft, crank, handle, rotation, rotary motion, oscillating motion, annotated sketches, exploded diagrams, mechanical system, input movement, process, output movement.
Textiles	Join, texture, rough, soft, threading, design, make, create, scissors, instructions, laces,	Running stitch, fabric, needle, thread, knot, scissors, template, pattern pieces, mark out, join, decorate, finish	Fabric, fasteners, compartments, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance	Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textile names, names of fastenings, pins, needles, thread, pinking shears, iron transfer paper
Cooking and nutrition	Mix, stir, pour, sharp, chopping, shop, shopping list, cook, chopping board, knife, cut, cooker, oven, bake	Fruit names, knife, chopping board, cut, slice, seed, pip, core Also sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky. Smooth, sharp etc Vegetable names, peeling slicing, cutting, squeezing, Also sensory vocabulary e.g. soft, juicy,	Bread, sandwich, spread, texture, taste, sweet, appearance, smell, taste, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, harvested, healthy varied diet, healthy varied diet, ingredients, yeast, flour, dough, wholemeal, spice, herbs, fat, sugar, carbohydrates, proteins, vitamins, nutrients, healthy, varied, knead, roll out, pour mix, shape	Healthy varied diet, ingredients, spice, herbs, fat, sugar, carbohydrates, proteins, vitamins, nutrients, healthy, varied, gluten, dairy, allergy, intolerance, seasonality, savoury, source, stir, pour, sprinkle, crumble, use by date marks, best before date marks, seasonality, produced, processed, balanced diet, ingredients used in different dishes.
Structures	Design, plan, model, make, build, construct, scissors, glue, tear, rip, cut, join, build, construction kits	Cut, fold, join, fix, structure, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder	Shell structures, three dimensional, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating	Frame structure, stiffen, strengthen, reinforce, triangulation, stability.