Hollinswood Primary School and Nursery

Design and Technology Skills and Knowledge Progression grid

2019-2020

Design and Technology is an inspiring, hands-on and unique subject. Using your creativity and imagination, you can design and make the most innovative products for a variety of different purposes. Through Design and Technology, you can listen to and adopt the ideas of others and create something fantastic that could support your community.

Pupils should work in a range of relevant contexts e.g. home and school, gardens and playgrounds, the local community, industry and the wider environment.

Technical knowledge

EYFS	Recognise that a range of technology is used in places such as homes and schools. They select and use particular technology to operate simple equipment.	Cut, fold, join, wall, tower, materials, shape, weak, strong, bottom, top, under, side
Year 1	Begin to understand how freestanding structures can be made stronger, stiffer and more stable. Use the correct technical vocabulary for projects. Explore how to use mechanisms in their products. *Textiles could be covered through Art*	<u>Structures</u> 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 <u>Mechanisms – Wheels and Axles</u> Vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used, dowel, body, cab <u>Textiles</u> Joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish, running stitch, needle, fabric
Year 2	Pupils understand the working characteristics of materials and components. Understand how freestanding structures can be made stronger, stiffer and more stable. Explore how to use mechanisms in their products. Use the correct technical vocabulary for projects. Begin to understand and use a wider range of materials. *Textiles could be covered through Art*	<u>Structures</u> 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 <u>Mechanisms – Sliders and Levers</u> Slider, lever, pivot, slot, bridge/guide, card, masking tape, paper, fastener, join, pull, push, up, down, straight, curve, forwards, backwards, guide. <u>Textiles</u>

		Joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish, running stitch, needle, fabric, quality, suitable, features
Year 3	Pupils use learning from science and mathematics to help make products that work. They understand that materials have functional and aesthetic qualities. Recognise that materials can be combined and mixed to create more useful characteristics. Know how mechanical systems such as levers and linkages create movement. Make strong, stiff shell structures for a purpose. *Textiles could be covered through Art*	<u>Structures</u> shell structure, three dimensional (3-D) shape, 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, font, lettering, text, graphics, decision <u>Textiles</u> fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance, knit, bond, pin, embroidery, banket, cross stitch <u>Mechanisms – Levers and Linkages</u> mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating, appealing, innovative <u>Electrical Systems</u> series circuit, fault, connection, toggle switch, push-to-make switch, push -to -break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device, control box
Year 4	Pupils use learning from science, mathematics and other subjects to help design and make products that work. Apply this thinking successfully to their own products. Know that simple electrical circuits and components can be used to create functional products. *Textiles could be covered through Art* *Electrical Systems could be covered through Science*	
Year 5	Explore more complex electrical circuits and components. Program computers and devices to monitor changes in the environment and control their products. Reinforce and strengthen a 3D framework. *Textiles could be covered through Art*	<u>Structures</u> frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent

Year 6	Program computer systems and devices to control their products. Reinforce and strengthen a 3D framework. Simple electronic components. *Textiles could be covered through Art*	<u>Textiles</u> seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, tacking, applique, pinking shears, clasp, hem, tie dye, renewable, authentic, chain stitch <u>Mechanisms – Pulleys or Gears</u> 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, spindle <u>Electrical Systems</u> reed switch, toggle switch, push-to-make switch, push-to-break 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.

Food and Nutrition

EYFS	Recognise that food comes from plants or animals. Begin to recognise that everyone should eat at least five portions of fruit and vegetables every day. Use techniques e.g. cutting, peeling and grating.	Healthy diet, fruit, vegetables, fork, knife, spoon, soft, sweet, hard, crunchy, seed, cut, squeeze, choosing, tasting.
Year 1	Know that food comes from plants or animals. Food is farmed, grown elsewhere (e.g home) or caught. Name and sort foods into the five groups in 'The Eatwell Plate.' Prepare some simple dishes. Use techniques e.g. cutting, peeling and grating. Recognise that food ingredients should be combined according to their sensory characteristics.	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, tasting

Year 2	Know that food is farmed, grown elsewhere (e.g home), imported or caught locally, regionally and internationally. Know how to prepare simples dishes safely and hygienically, without using a heat source. Prepare a range of dishes. Begin to know that a healthy diet is made up from a variety and balance of different foods and drinks. That food is needed to provide energy for the body.	
Year 3	Know how to prepare and cook a variety of sweet and savoury dishes safely and hygienically, including the use of a heat source. Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. Recognise that a healthy diet is made up of a variety and balance of different foods and drink depicted on the 'Eat well plate'. Know that to be for and healthy food is needed to provide energy for the body. Recognise the range of fresh, precooked and processed foods. *PSHE – The risks associated with an inactive lifestyle (including obesity)*	Names 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
Year 4	Know that food is farmed, reared, grown elsewhere (e.g. home, allotments), exported, imported or caught. This can be on a local, regional and international scale. Begin to know that seasons and weather affect food availability. Begin to adapt recipes and know about substances that are needed for health e.g. water, fibre and nutrients. Recognise a range of fresh, pre-cooked and processed foods. *PSHE – The risks associated with an inactive lifestyle (including obesity)*	
Year 5	Begin to know how food is processed into ingredients that can be eaten or used in cooking. Know that recipes can be adapted to change the taste, texture, aroma and appearance. Know that different foods contain substances that are needed for health e.g. water, fibre, vitamins, minerals and nutrients. Adapt recipes by adding or substituting one or more ingredients. *PSHE – The risks associated with an inactive lifestyle (including obesity)* *PSHE - what constitutes a healthy diet (including understanding calories and other nutritional content).*	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

Year 6	Begin to understand where food is produced and sold. That advertising and costs effects the choice of food eaten. Know that a healthy diet is made up of a variety and balance of different foods and drinks, as depicted on 'The Eatwell Plate.' Know that different foods contain substances that are needed for health e.g. water, fibre, vitamins, minerals and nutrients. Understand that healthy diets must incorporate the correct amounts of food types and substances. Understand that exercise is also important for our wellbeing and fitness. Begin to know the importance of balanced diets and how to store, prepare and cook food safely and hygienically. Recreate and adapt existing and new recipes by adding or substituting a range of ingredients. *PSHE – The risks associated with an inactive lifestyle (including obesity)* *PSHE - what constitutes a healthy diet (including understanding calories and other nutritional content).*	

Skills: Design

EYFS	Pupils use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.	Make, shape, discuss, draw, explore
Year 1	Say how their products will work. Generate ideas by drawing on their own experiences. Develop and communicate ideas by talking and drawing. Begin to model ideas by exploring materials, components and mock- ups.	planning, investigating, design, user, purpose, ideas, product
Year 2	Describe what their products are for and their purpose. Say how their products will work and how they're suitable for intended users. Use simple design criteria to help develop their ideas. Use knowledge of existing products to help come up with ideas. Develop and communicate ideas by talking and drawing. Model ideas by exploring materials, components, constructions kits and by making templates and mock-ups.	investigating, planning, design, user, purpose, ideas, design criteria, product, function

	Use information and communication technology confidently (where appropriate) to develop and communicate their ideas. Begin to share ideas through discussion. Generate realistic ideas, focusing on the needs of the user.	
Year 3	Indicate design features of their products. Gather information about the needs and wants of individuals or groups. Develop their own design criteria. Confidently share and clarify ideas through discussion. Model ideas using prototypes. Use annotated sketches, diagrams and some computer-aided design packages, to develop and communicate ideas. Take account of the availability of resources.	user, purpose, design, model, annotated sketch, innovative, investigate, label, drawing, function, planning, design criteria, appealing
Year 4	Describe in depth, the purpose of their products. Indicate design features of their products that will appeal to intended users. Develop their own design criteria and use this to inform their ideas. Begin to carry out research to identify users' needs/wants. Use annotated sketches, some cross-sectional drawings and computer-aided design packages, to develop and communicate ideas. Generate realistic ideas, focusing on the needs of the user. Make design decisions that take account of the availability of resources.	design brief, design criteria, innovative, user, purpose, function, appealing, planning, annotated sketch
Year 5	Develop their own design criteria and use this to inform their ideas. Carry out research e.g. surveys, interviews, questionnaires and some web-based resources, to identify users' needs, wants and preferences. Develop a simple design specification to guide their thinking. Use annotated sketches, cross-sectional drawings, exploded diagrams and computer-aided design packages, to develop and communicate ideas. Generate innovative ideas drawing on research. Make design decisions based on time, cost and resources constraints.	design decisions, functionality, authentic, user, purpose, design specification, design brief, innovative, research, design criteria, annotate
Year 6	Develop detailed design specifications to guide their thinking and planning. Begin to identify and solve their own design problems. Model ideas using prototypes and pattern pieces. Use annotated sketches, cross-sectional drawings, exploded diagrams and computer-aided design packages, to develop and communicate ideas. Make informed design decisions based on time, cost and resources constraints. Begin to combine ideas from a variety of sources. Begin to use a variety of approaches to generate creative ideas.	function, innovative, design specification, design brief, user, purpose design brief, design specification, annotated sketch, purpose, user, innovation, research, functional

Skills: Make

EYFS		Make, build, join, strong, weak, cut, stick
Year 1	Plans by suggesting what to do next. Selects from a range of tools, materials and components according to their characteristics. Explains their choices. Follows procedures for safety and hygiene. Measures, marks out, shapes and cuts a range of materials. Begins to assemble, join and combine materials and components.	make, user, purpose, product
Year 2	Explains their choices. Confidently follows procedures for safety and hygiene and explains reasons for this. Uses a range of materials, components, construction kits, textiles, food ingredients and mechanical products. Accurately measures, marks out, cuts and shapes a range of materials and components. Accurately assembles, joins and combines materials and components. Begins to use finishing techniques, including those from art and design sessions.	make, user, purpose, ideas, design criteria, product, function
Year 3	Select tools and equipment suitable to the task. Explain their choices, giving evidence. Selects materials and components suitable to the task. Order the main stages of making logically. Use a wide range of materials and components e.g. textiles, mechanical, construction kits, electrical and food ingredients. Assembles, joins and combines many materials with some accuracy. Apply several finishing techniques.	user, purpose, model, prototype, functional, innovative, function, design criteria, appealing
Year 4	Explain their choices, giving evidence. Order the stages of the making process, in logical steps. Use an extensive range of materials and components e.g. textiles, mechanical, construction kits, electrical and food ingredients. Measures, marks out, cuts and shapes materials and components with accuracy. Accurately assembles, joins and combines most materials. Accurately apply several finishing techniques. Explain reasons for applying these techniques.	design criteria, innovative, prototype, user, purpose, function, appealing

Year 5	Produce appropriate lists of tools, equipment and materials that they will need. Formulate step-by-step plans as guide to making. Accurately apply a range of finishing techniques, including those from art and design. Use techniques that involve a number of steps. Use resourcefulness and resilience when tackling practical problems.	design decisions, functionality, authentic, user, purpose, design brief, innovative, design criteria, mock-up, prototype
Year 6	Produces ordered sequences and schedules for products they design. Formulate step-by-step plans as guide to making. Begin to make costings by using spreadsheet software packages. Use resourcefulness, resilience and innovation, when tackling practical problems. Explains next steps in learning, drawing from prior experience.	function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up

Skills: Evaluate

EYFS	Talk about their designs and what they're making. Talk about how to make their products better. Explore what products are, who they are for, how they are used and where they are from. Talk about likes and dislikes of existing products and own product created.	Like, dislike, product, how
Year 1	Make simple judgements about their products and ideas against design criteria. Explore what products are, what they are made from, who they are for, how they are used and where they might be used. Talk about likes and dislikes of existing products	evaluate, user, purpose, product, like, dislike, who, how, why
Year 2	Talk and write about how to make their products better. Begin to refer to their design criteria as they design and make. Think about whether products can be recycled. Talk about likes and dislikes of existing products. Give reasons.	evaluate, user, purpose, ideas, product, function, recycle, like, dislike, who, how, why
Year 3	Identify the strengths and areas for development in their ideas and products. Consider the views of others, including intended users, to improve their work. Refer to their design criteria as they design and make. Use their design criteria to evaluate their completed products. Investigate and analyse: how well products have been designed and made; why materials have been chosen; what methods of construction were used; how well the products worked; whether they achieved their	user, purpose, evaluate, functional, innovative, appealing, product, recycle, sustainable, who, how, why, what, method, construct, analyse

	purpose and the needs/wants of the users. Investigate and analyse: who designed the products; where products were designed and made; when products were designed and made; whether products can be recycled or re-used. Recognise successful inventors, designers, chefs and engineers, who have been influential in the design and technology industries.	
Year 4	Use their design criteria to evaluate and improve their completed products. Begin to consider cost and sustainability. Recognise several inventors, designers, chefs, manufacturers and engineers, who have been influential in the design and technology industries. Begin to consider the impact and innovative qualities of their products.	evaluating, design brief, design criteria, innovative, prototype, user, purpose, function, appealing, sensory evaluations, recycle, sustainable, who, how, why, what, method, construct, analyse
Year 5	Critically evaluate the quality of the design, manufacture and fitness for purpose of their products. Evaluate their ideas and products against their original design specification. Consider cost and sustainability of materials, designs and products. Explore and comment on the impact and innovative qualities of their products. Recognise several inventors, designers, chefs, manufacturers and engineers, who have been influential in the design and technology industries.	functionality, authenticity, user, purpose, design specification, design brief, innovative, evaluate, annotate, sustainability, who, how, why, what, method, construct, analyse, positive, negative
Year 6	Confidently identify the strengths and areas for development in their ideas and products. Consider the views of others, including intended users, to improve their work. Begin to identify ways of improving their products. Actively involve others in the testing of their products. Investigate and analyse: how much products cost to make; how innovative products are; how sustainable the materials in products are; what impact products have beyond their intended purpose. Begin to investigate new and emerging technologies. Consider the positive and negative impact that products can have in the wider world. Recognise several inventors, designers, chefs, manufacturers and engineers, who have been influential in the design and technology industries.	Evaluate, function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, sustainability, who, how, why, what, method, influence, positive, negative