St Vincent's Catholic Primary - Design and Technology Curriculum Overview

EYFS Design & Technology

Expressive Arts and Design in EYFS

Taken from Development Matters (Highlighted Statements Relate to Design and Technology)

Developmental Bands	Exploring and Using Media and Materials	Being Imaginative
22 -36 Months	• Joins in singing favourite songs • Creates sounds by banging, shaking, tapping or blowing • Shows an interest in the way musical instruments sound • Experiments with blocks, colours and marks	• Beginning to use representation to communicate, e.g. drawing a line and saying 'That's me' • Beginning to make-believe by pretending
30 – 50 Months	• Enjoys joining in with dancing and ring games • Sings a few familiar songs • Beginning to move rhythmically • Imitates movement in response to music • Taps out simple repeated rhythms • Explores and learns how sounds can be changed • Explores colour and how colours can be changed • Understands that they can use lines to enclose a space, and then begin to use these shapes to represent objects • Beginning to be interested in and describe the texture of things • Uses various construction materials • Beginning to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces • Joins construction pieces together to build and balance • Realises tools can be used for a purpose	• Developing preferences for forms of expression • Uses movement to express feelings • Creates movement in response to music • Sings to self and makes up simple songs • Makes up rhythms • Notices what adults do, imitating what is observed and then doing it spontaneously when the adult is not there • Engages in imaginative role-play based on own first-hand experiences • Builds stories around toys, e.g. farm animals needing rescue from an armchair 'cliff' • Uses available resources to create props to support role play. • Captures experiences and responses with a range of media, such as music, dance and paint and other materials or words
40 – 60 Months	• Begins to build a repertoire of songs and dances • Explores the different sounds of instruments • Explores what happens when they mix colours • Experiments to create different textures • Understands that different media can be combined to create new effects • Manipulates materials to achieve a planned effect • Constructs with a purpose in mind, using a variety of resources • Uses simple tools and techniques competently and appropriately • Selects appropriate resources and adapts work where necessary • Selects tools and techniques needed to shape, assemble and join materials they are using	• Creates simple representations of events, people and objects • Initiates new combinations of movement and gesture in order to express and respond to feelings, ideas and experiences • Chooses particular colours to use for a purpose • Introduces a storyline or narrative into their play • Plays alongside other children who are engaged in the same theme • Plays cooperatively as part of a group to develop and act out a narrative
Early Learning Goal	Children sing songs, make music and dance, and experiment with ways of changing them. They safely 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.

Year 1 Design and Technology Topics

KS1 National Curriculum Design and Technology	**Mechanisms - Wheels and Axles**	**Structures - Freestanding Structures**	**Food and Nutrition – Preparing Fruit and Vegetables**
Pupils should be taught: 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	Through exploring how vehicles use different types of wheels and axles, the children will design and make their own vehicle and will: Design: • Generate initial ideas and simple design criteria through talking and using own experiences. • Develop and communicate ideas through drawings and mock-ups. Make: • 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. Evaluate: • Explore and evaluate a range of products with wheels and axles.	Through exploring different structures, children will design and make a model of a structure that can be used for a specific purpose. Design: • 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. Make: • 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. Evaluate: • Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.	Through examining a range of fruit and vegetables and providing opportunities for handing, smelling and tasting, they will design and make a fruit/vegetable dish. Focus to be on preparing a simple dish hygienically and using techniques such as cutting, peeling and grating: Design: • 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. Make: • Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. • Children to create a simple dish safely and hygienically without using a heat source e.g. fruit kebabs. • Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. Evaluate: • Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.

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.	• Evaluate their own 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.	• 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.	• 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 The eat well plate. • Know and use technical and sensory vocabulary relevant to the project.
Key Vocabulary	**Mechanisms - Wheels and Axles** 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	**Structures - Freestanding Structures** 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 design, make, evaluate, user, purpose, ideas, design criteria, product, function	**Food and Nutrition – Preparing Fruit and Vegetables** 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.

Year 2 Design and Technology Topics

KS1 National Curriculum Design and Technology	**Mechanisms - Sliders and Levers** Through exploring a range of pre-existing products, the children will explore sliders and levers and will design and make a moving picture book.	**Textiles – Templates and Joining Techniques** Through investigating and evaluating existing products, children will explore and compare fabrics, joining techniques, finishing techniques and fastenings to make their own puppet.	**Food – Preparing Fruit and Vegetables** Through examining a range of regional/UK fruit and vegetables, children will design a make a healthy dish such as a salad or fruit jelly. Focus to be on preparing a simple dish hygienically and using techniques such as cutting, peeling and grating:
Pupils should be taught: 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, mockups 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	Design: • Generating ideas based on simple designs criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through drawing and mock ups with card and paper. Make: • 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. Evaluate: • 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	Design: • 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. Make: • 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. Evaluate: • 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.	Design: • 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. Make: • Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. • Children to create a simple dish safely and hygienically without using a heat source e.g. a salad. • Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. Evaluate: • Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.

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.	relation to the purpose and the user and whether it meets design criteria. Technical Knowledge: • Explore and use sliders and levers. • Understand that different mechanisms produce different types of movement. Know and use technical vocabulary relevant to the project.	Technical Knowledge and Understanding: • Understand how simple 3-D textile products are made, using a template to create two identical shapes. • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. • Know and use technical vocabulary relevant to the project.	• 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 The eat well plate.
Key Vocabulary	**Mechanisms - Sliders and Levers** 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	**Textiles – Templates and Joining Techniques** names of existing products, joining and finishing techniques, tools, fabrics and components template, pattern pieces, mark out, join, decorate, finish features, suitable, quality mock up, design brief, design criteria, make, evaluate, user, purpose, function.	**Food and Nutrition – Preparing Fruit and Vegetables** 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.

Year 3 Design and Technology Topics

KS2 National Curriculum Design and Technology

Pupils should be taught:
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:

Mechanical Systems - Pneumatics

Through investigating, analysing and evaluating books, and where available, other products which have range of lever and linkage mechanism, children will:

Design:
- 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.

Make:
- 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.

Evaluate:
- 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:

Structures – Shell structures using Computer Aided Design (CAD)

Through constructing and assembling nets, children will create a box and will:

Design:
- Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product.
- Develop ideas through the analysis of existing products and use annotated sketches and prototypes and computer aided design to model and communicate ideas.

Make:
- Plan the order the main stages of making.
- Select and use appropriate tools 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.

Evaluate:
- Investigate and evaluate a range of existing 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:

Food and Nutrition – Healthy and Varied Diet

Through investigating a range of food products, children will link this to the principles of a varied and healthy diet using the Eat Well Plate. Children to focus on skills of kneading, mixing and baking using a heat source, e.g. Bread/Pizza.

Design:
- 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.

Make:
- 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.

Evaluate:
- 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.

• 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] • apply their understanding of computing to program, monitor and control their products.	• Understand and use pneumatic mechanisms. • Know and use technical vocabulary relevant to the project.	• Develop and use knowledge of nets of cubes 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.	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.
Key Vocabulary	**Mechanical Systems: Pneumatics** pneumatics, components, fixing, attaching, tubing, syringe, plunger, split pin, paper fastener pneumatic system, input movement, process, output movement, control, compression, pressure, inflate, deflate, pump, seal, airtight linear, rotary, oscillating, reciprocating user, purpose, function, prototype, design criteria, innovative, appealing, design brief, research, evaluate, ideas, constraints, investigate.	**Structures – Shell structures using Computer Aided Design (CAD)** 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 evaluating, design brief design criteria, innovative, prototype	**Food and Nutrition – Healthy and Varied Diet** 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

Year 4 Design and Technology Topics

KS2 National Curriculum Design and Technology	**Textiles – 2D Shape to 3D product** Through investigating a range of textile products that have a selection of stitches, joins, fabric, finishing techniques, fastenings and purposes, they will design, make and evaluate a product to use.	**Electrical Systems – Simple programming and control** Through making manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers and using a computer control program, children will:	**Food and Nutrition – Healthy and Varied Diet** Through investigating a range of food products, children will link this to the principles of a varied and healthy diet using the Eat Well Plate.
Pupils should be taught: 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	Design: • 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. Make: • 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. Evaluate: • Investigate a range of 3-D textile products relevant to the project.	Design: • Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. Make: • Order the main stages of making. • Select from and use tools and equipment to cut, shape, join and finish with some accuracy. • Connect simple electrical components and a battery in a series circuit to achieve a functional outcome. • Program a standalone control box, microcontroller or interface	Design: • 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. Make: • 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. Evaluate: • Carry out sensory evaluations of a variety of ingredients and products.

• 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] • apply their understanding of computing to program, monitor and control their products.	• 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: • Know how to strengthen, stiffen and reinforce existing fabrics. • 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.	box to enhance the way the product works. Evaluate: • Investigate and analyse a range of existing battery powered products. • Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. Technical Knowledge and Understanding: • Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. • Know and use technical vocabulary relevant to the project.	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.
Key Vocabulary	**Textiles – 2D Shape to 3D product** 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	**Electrical Systems – Simple programming and control** Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, light emitting diode (LED), bulb, bulb holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, process user, purpose, function, prototype, design criteria, innovative, appealing, design brief	**Food and Nutrition – Healthy and Varied Diet** 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

Year 5 Design and Technology Topics

KS2 National Curriculum Design and Technology

Pupils should be taught:
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]
- apply their understanding of computing to program, monitor and control their products.

Mechanical Systems - CAMS

Through investigating a range of textile products that have a selection of stitches, joins, fabric, finishing techniques, fastenings and purposes, they will design, make and evaluate a product to use.

Design:
- Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.
- Develop a simple design specification to guide their thinking.
- Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.

Make:
- 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 that are accurately assembled and well finished. Work within the constraints of time, resources and cost.

Evaluate:
- Compare the final product to the original design specification.
- Test products with the 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.
- Investigate famous manufacturing and engineering companies relevant to the project.

Textiles – Using Computer-aided design (CAD) in Textiles.

Through developing skills of 2-D paper pattern making using grid or tracing paper to create a 3-D product using computer-aided design, children will:

Design:
- Generate innovative ideas by carrying out research including surveys, interviews and questionnaires.
- Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer aided design.
- Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.

Make:
- Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team.
- Select from 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.

Evaluate:
- Investigate and analyse textile products linked to their final product.
- 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.

Food and Nutrition – Celebrating Culture and Seasonality

Through using relevant research into existing products to include personal/cultural differences, ensuring a healthy diet meeting dietary neds ad the availability of locally sourced/seasonal/organic ingredients, children will focus on adaptations of recipes, e.g. savoury scones.

Design:
- 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.

Make:
- 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.

Evaluate:
- 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.

	Technical Knowledge and Understanding: • Understand that mechanical systems have an input, process and an output. • Understand how cams can be used to produce different types of movement and change the direction of movement. • Know and use technical vocabulary relevant to the project.	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.	• 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.
Key Vocabulary	**Mechanical Systems - CAMS** cam, snail cam, off-centre cam, peg cam, pear shaped cam, follower, axle, shaft, crank, handle, housing, framework rotation, rotary motion, oscillating motion, reciprocating motion annotated sketches, exploded diagrams mechanical system, input movement, process, output movement design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief	**Textiles – Using Computer-aided design (CAD) in Textiles** 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	**Food and Nutrition – Celebrating Culture and Seasonality** 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

Year 6 Design and Technology Topics

KS2 National Curriculum Design and Technology

Pupils should be taught:
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]

Structures – Frame Structures

Through using skills and techniques to accurately join framework material together to make a structure, children will:

Design:
- 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.

Make:
- 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.

Evaluate:
- 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

Electrical Systems – Monitoring and control

Through practising methods for making secure electrical connections and exploring a range of electrical systems that could control their product, children will:

Design:
- Develop a design specification ofr 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 of circuit diagrams,

Make:
- 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.

Evaluate:
- 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.

Technical Knowledge and Understanding:
- Understand and use electrical systems in their products.

Food and Nutrition – Celebrating Culture and Seasonality

Through researching different foods from around the world, children will design and make a savoury dish from another culture encompassing the skills they have learned across the key Stage. This will be focused upon using a suitable heat source. The children will:

Design:
- 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.

Make:
- 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.

Evaluate:
- 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.

• apply their understanding of computing to program, monitor and control their products.	Technical Knowledge and Understanding: • Understand how to strengthen, stiffen and reinforce 3-D frameworks. • Know and use technical vocabulary relevant to the project.	• 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.	• 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.
	Structures – Frame Structures Frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional	**Electrical Systems – Monitoring and control** 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 function, innovative, design specification, design brief, user, purpose	**Food and Nutrition – Celebrating Culture and Seasonality** 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