Christ Church CE VC Primary School

# Design Technology Curriculum Progression Map

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

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

**NC KS1 content:** 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].

**KS2 NC content:** 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].

| KS1 | National Curriculum, key skills and knowledge - **Generating Ideas - Designing** | |
|---|---|---|
| Year Group | Progression | Key Vocabulary |
| FS | I can say what I am going to make before I do it.<br>I can think and talk about what I am going to make before I do it and carry it out.<br>I can plan what I am going to make by drawing it first.<br>I can use a tick list to say what resources I am going to need to make my boat.<br>I can say what I am going to make before I do it.<br>I can think and talk about what I am going to make before I do it and carry it out.<br>I can plan what I am going to make by drawing it first.<br>I can use a tick list to say what resources I am going to need to make my boat. | Plan, design, implement, draw, tick list, resources, explore |
| Year 1 | ⁍ Learning the importance of a clear design criteria<br>⁍ Including individual preferences and requirements in a design<br>⁍ Explaining how to adapt mechanisms, using bridges or guides to control the movement<br>⁍ Designing a moving story book for a given audience<br>⁍ Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move<br>⁍ Creating clearly labelled drawings which illustrate movement<br>⁍ Designing smoothie carton packaging by-hand or on ICT software<br>⁍ Using a template to create a design for a puppet | designed, design, generated, designers, product, reason, purpose, target group, key audience, improved, final design, factories, machinery, manually, idea, develop, produce, key design features |

Christ Church CE VC Primary School

| | | |
|---|---|---|
| Year 2 | ⁍ Generating and communicating ideas using sketching and modelling<br>⁍ Selecting a suitable linkage system to produce the desired motions<br>⁍ Designing a wheel Selecting appropriate materials based on their properties<br>⁍ Creating a class design criteria for a moving monster<br>⁍ Designing a moving monster for a specific audience in accordance with a design criteria<br>⁍ Designing a healthy wrap based on a food combination which work well together<br>⁍ Designing a pouch | designed, design, generated, designers, reason, purpose, product, target group, key audience, improved, final design, modified, factories, machinery, manually, process, produce, key design features |
| KS2 | National Curriculum, key skills and knowledge - **Generating Ideas - Designing**<br>**Design – by the end of KS2 pupils should be able to:**<br>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<br>generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design | |
| Year Group | Progression | Key Vocabulary |
| Year 3 | ⁍ Designing a castle with key features to appeal to a specific person/purpose<br>⁍ Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours<br>⁍ Designing and/or decorating a castle tower on CAD software<br>⁍ Designing a toy which uses a pneumatic system<br>⁍ Developing design criteria from a design brief<br>⁍ Generating ideas using thumbnail sketches and exploded diagrams<br>⁍ Learning that different types of drawings are used in design to explain ideas clearly<br>⁍ Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish<br>⁍ Designing and making a template from an existing cushion and applying individual design criteria<br>⁍ Problem solving by suggesting potential features on a Micro: bit and justifying my ideas ⁍ Developing design ideas for a technology pouch ⁍ Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge | reasons, purposes, target groups, key audience, product, designed, design, design criteria, outcomes, research, final design, improved, modified, produce, annotation, design features |
| Year 4 | ⁍ Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect<br>⁍ Designing a shape that reduces air resistance<br>⁍ Drawing a net to create a structure from<br>⁍ Choosing shapes that increase or decrease speed as a result of air resistance<br>⁍ Personalising a design<br>⁍ Building frame structures designed to support weight<br>⁍ Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas | reasons, purposes, target group, key audience, product, design, designed, research, inform, product, design criteria, outcomes, improved, modified, produce, annotation, design features |

| | | |
|---|---|---|
| | ▫ Designing a biscuit within a given budget, drawing upon previous taste testing<br>▫ Writing design criteria for a product, articulating decisions made<br>▫ Designing a personalised book sleeve | |
| Year 5 | ▫ Designing a stable structure that is able to support weight<br>▫ Creating frame structure with focus on triangulation<br>▫ Designing a pop-up book which uses a mixture of structures and mechanisms<br>▫ Storyboarding ideas for a book<br>▫ Naming each mechanism, input and output accurately<br>▫ Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product<br>▫ Developing design criteria based on finding from investigating existing products<br>▫ Developing design criteria that clarifies the target user<br>▫ Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients<br>▫ Writing an amended method for a recipe to incorporate the relevant changes to ingredients<br>▫ Designing appealing packaging to reflect a recipe<br>▫ Researching (books, internet) for a particular (user's) animal's needs<br>▫ Developing design criteria based on research<br>▫ Generating multiple housing ideas using building bricks<br>▫ Understanding what a virtual model is and the pros and cons of traditional and CAD modelling<br>▫ Placing and manoeuvring 3D objects, using CAD<br>▫ Changing the properties of, or combine one or more 3D objects, using CAD | key audience, designing, enterprise product, target group, product, design criteria, research, cross sectional exploded diagram, prototype, diagrams, process, Computer Aided Design, 2D designs, 3D designs |
| Year 6 | ▫ Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs<br>▫Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement<br>▫ Understanding how linkages change the direction of a force<br>▫ Making things move at the same time<br>▫ Understanding and drawing cross-sectional diagrams to show the inner-working<br>▫ Designing a steady hand game - identifying and naming the components required<br>▫ Drawing a design from three different perspectives | key audience, designing, enterprise product, target group, product, design criteria, research, cross sectional exploded diagram, prototype, diagrams, process, Computer Aided Design, 2D designs, 3D designs |

| | | |
|---|---|---|
| | ▫ Generating ideas through sketching and discussion<br>▫ Modelling ideas through prototypes<br>▫ Writing a recipe, explaining the key steps, method and ingredients<br>▫ Writing a design brief from information submitted by a client<br>▫ Developing design criteria to fulfil the client's request<br>▫ Considering and suggesting additional functions for my navigation tool<br>▫ Developing a product idea through annotated sketches<br>▫ Placing and manoeuvring 3D objects, using CAD<br>▫ Changing the properties of, or combine one or more 3D objects, using CAD<br>▫ Including facts and drawings from research undertaken | |

Christ Church CE VC Primary School

| KS1 | National Curriculum, key skills and knowledge - Design and Technology: **Making** | |
|---|---|---|
| Year group | Progression | Key Vocabulary |
| FS | I can show increasing control over an object in pushing, patting.<br>I can explore and test out materials.<br>I can explore which materials to use when building a bridge and ensuring that a goat can stand on the bridge without it falling down. I can use junk modelling materials to make a shaker<br>I can show interest in and describe the texture of things.<br>I can use various construction materials.<br>I know the properties of materials and their suitability for a particular purpose. I can use junk modelling materials to create a drum and a frying pan, using appropriate resources for purpose.<br>I can test my models fit their purpose.<br>I can choose the resources I need for my activity.<br>I can handle tools and equipment effectively.<br>I can safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.<br>I can use what I have learnt about media and materials in original ways, thinking about uses and purposes.<br>I can represent my own ideas, thoughts and feelings through design and technology.<br>I can select appropriate materials to use to make a boat that will float and will be waterproof, following my plan.<br>I can use junk modelling materials to create an instrument to represent a sound from the seaside. | Push, pat, explore, test, materials, build, bridge, strong, weak, describe, texture, construct, create, resources, tools, equipment, safely, techniques, experiment, represent, plan, represent |
| Year 1 | ▫ Making stable structures from card, tape and glue<br>▫ Learning how to turn 2D nets into 3D structures<br>▫ Following instructions to cut and assemble the supporting structure of a windmill<br>▫ Making functioning turbines and axles which are assembled into a main supporting structure<br>▫ Following a design to create moving models that use levers and sliders<br>▫ Adapting mechanisms<br>▫ Chopping fruit and vegetables safely to make a smoothie<br>▫ Identifying if a food is a fruit or a vegetable | sizes, shapes, lines, tracing, simple lines, fine motor skills, join, materials, glue, sellotape, blu-tack, thread, equipment, hole punched holes, |

| | | |
|---|---|---|
| | ▫ Learning where and how fruits and vegetables grow<br>▫ Cutting fabric neatly with scissors<br>▫ Using joining methods to decorate a puppet<br>▫ Sequencing steps for construction | |
| Year 2 | ▫ Making a structure according to design criteria<br>▫ Creating joints and structures from paper/card and tape<br>▫ Building a strong and stiff structure by folding paper<br>▫ Selecting materials according to their characteristics<br>▫ Following a design brief<br>▫ Making linkages using card for levers and split pins for pivots<br>▫ Experimenting with linkages adjusting the widths, lengths and thicknesses of card used<br>▫ Cutting and assembling components neatly<br>▫ Slicing food safely using the bridge or claw grip<br>▫ Constructing a wrap that meets a design brief<br>▫ Selecting and cutting fabrics for sewing<br>▫ Threading a needle<br>▫ Sewing running stitch, with evenly spaced, neat, even stitches to join fabric<br>▫ Neatly pinning and cutting fabric using a template | product, designs, materials, purpose, tracing, simple lines, shapes, patterns, template, create, cut, scissors, investigate, methods, joining, equipment, |
| KS2 | National Curriculum, key skills and knowledge - Design and Technology: **Making**<br>**Make – by the end of KS2 pupils should be able to:**<br>lect from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately<br>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 | |
| Year Group | Progression | Key Vocabulary |
| Year 3 | ▫ Constructing a range of 3D geometric shapes using nets<br>▫ Creating special features for individual designs<br>▫ Making facades from a range of recycled materials<br>▫ Creating a pneumatic system to create a desired motion<br>▫ Building secure housing for a pneumatic system | Reclaimed, recycled, cut, fold, trace, shape, product, create, simple lever slider, pop-up book/card, join, finish, lever, measure, score, components |

| | | |
|---|---|---|
| | ▫ Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy<br>▫ Selecting materials due to their functional and aesthetic characteristics<br>▫ Manipulating materials to create different effects by cutting, creasing, folding, weaving<br>▫ Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination<br>▫ Following the instructions within a recipe<br>▫ Following design criteria to create a cushion ▫ Selecting and cutting fabrics with ease using fabric scissors ▫ Threading needles with greater independence<br>▫ Tying knots with greater independence<br>▫ Sewing cross stitch to join fabric<br>▫ Decorating fabric using appliqué<br>▫ Completing design ideas with stuffing and sewing the edges<br>▫ Using a template when cutting and assembling the pouch<br>▫ Following a list of design requirements<br>▫ Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch<br>▫ Applying functional features such as using foam to create soft buttons | |
| Year 4 | ▫ Creating a range of different shaped frame structures<br>▫ Making a variety of free standing frame structures of different shapes and sizes<br>▫ Selecting appropriate materials to build a strong structure and for the cladding<br>▫ Reinforcing corners to strengthen a structure<br>▫ Creating a design in accordance with a plan<br>▫ Learning to create different textural effects with materials<br>▫ Measuring, marking, cutting and assembling with increasing accuracy<br>▫ Making a model based on a chosen design<br>▫ Making a torch with a working electrical circuit and switch<br>▫ Using appropriate equipment to cut and attach materials<br>▫ Assembling a torch according to the design and success criteria<br>▫ Following a baking recipe<br>▫ Cooking safely, following basic hygiene rules<br>▫ Adapting a recipe<br>▫ Making and testing a paper template with accuracy and in keeping with the design criteria | cut, fold, trace, shape, produce, product, create, simple lever slider, pop-up book/card, join, finish, tools, equipment, make, equipment, techniques, reinforce, strengthen, |

| | | |
|---|---|---|
| | ▫ Measuring, marking and cutting fabric using a paper template<br>▫ Selecting a stitch style to join fabric, working neatly sewing small neat stitches<br>▫ Incorporating fastening to a design | |
| Year 5 | ▫ Making a range of different shaped beam bridges<br>▫ Using triangles to create truss bridges that span a given distance and supports a load<br>▫ Building a wooden bridge structure<br>▫ Independently measuring and marking wood accurately<br>▫ Selecting appropriate tools and equipment for particular tasks<br>▫ Using the correct techniques to saws safely<br>▫ Identifying where a structure needs reinforcement and using card corners for support<br>▫ Explaining why selecting appropriating materials is an important part of the design process<br>▫ Understanding basic wood functional properties<br>▫ Following a design brief to make a pop up book, neatly and with focus on accuracy<br>▫ Making mechanisms and/or structures using sliders, pivots and folds to produce movement<br>▫ Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result<br>▫ Altering a product's form and function by tinkering with its configuration.<br>▫ Making a functional series circuit, incorporating a motor<br>▫ Constructing a product with consideration for the design criteria<br>▫ Cutting and preparing vegetables safely<br>▫ Using equipment safely, including knives, hot pans and hobs<br>▫ Knowing how to avoid cross-contamination<br>▫ Following a step by step method carefully to make a recipe<br>▫ Understanding the functional and aesthetic properties of plastics<br>▫ Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range | designs, investigate, investigations, thread materials, tools, components, functional, aesthetic properties |
| Year 6 | ▫ Building a range of play apparatus structures drawing upon new and prior knowledge of structures<br>▫ Measuring, marking and cutting wood to create a range of structures<br>▫ Using a range of materials to reinforce and add decoration to structures<br>▫ Measuring, marking and checking the accuracy of the jelutong and dowel pieces required<br>▫ Measuring, marking and cutting components accurately using a ruler and scissors<br>▫ Assembling components accurately to make a stable frame<br>▫ Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles<br>▫ Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set<br>▫ Constructing a stable base for a game<br>▫ Accurately cutting, folding and assembling a net | designs, investigate, investigations, tools, components, functional, aesthetic properties |

| | | |
|---|---|---|
| | ▫ Decorating the base of the game to a high quality finish<br>▫ Making and testing a circuit Incorporating a circuit into a base<br>▫ Following a recipe, including using the correct quantities of each ingredient<br>▫ Adapting a recipe based on research<br>▫ Working to a given timescale<br>▫ Working safely and hygienically with independence<br>▫ Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo)<br>▫ Explaining material choices and why they were chosen as part of a product concept<br>▫ Programming an N,E, S,W cardinal compass | |

Christ Church CE VC Primary School

| KS1 | National Curriculum, key skills and knowledge - Design and Technology: **Evaluating** | |
|---|---|---|
| Year Group | Progression | Key Vocabulary |
| FS | I can say what I like about a creation when asked and if it works.<br>I can make alterations to a creation to make it fit a purpose. I can evaluate my drum creation<br>I can evaluate my model of a boat, after testing it and say what I could do to improve it. | Creation, good, bad, like, dislike, change, improve, alteration, evaluate, model, test |
| Year 1 | ▫ Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't<br>▫ Suggest points for improvements<br>▫ Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed<br>▫ Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move<br>▫ Tasting and evaluating different food combinations<br>▫ Describing appearance, smell and taste<br>▫ Suggesting information to be included on packaging<br>▫ Reflecting on a finished product, explaining likes and dislikes | evaluate, strengths, suggestions, product |
| Year 2 | ▫ Testing the strength of own structures<br>▫ Identifying the weakest part of a structure<br>▫ Evaluating different designs<br>▫ Testing and adapting a design<br>▫ Evaluating own designs against design criteria<br>▫ Using peer feedback to modify a final design<br>▫ Describing the taste, texture and smell of fruit and vegetables<br>▫ Taste testing food combinations and final products<br>▫ Describing the information that should be included on a label<br>▫ Evaluating which grip was most effective<br>▫ Troubleshooting scenarios posed by teacher | evaluate, strengths, suggestions, product |
| KS2 | National Curriculum, key skills and knowledge - Design and Technology: **Evaluating**<br>**Evaluate – by the end of KS2 pupils should be able to:**<br>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<br>understand how key events and individuals in design and technology have helped shape the world | |
| Year Group | Progression | Key Vocabulary |
| Year 3 | ▫ Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design<br>▫ Suggesting points for modification of the individual designs<br>▫ Using the views of others to improve designs<br>▫ Testing and modifying the outcome, suggesting improvements<br>▫ Understanding the purpose of exploded-diagrams through the eyes of a designer and their client<br>▫ Establishing and using design criteria to help test and review dishes<br>▫ Describing the benefits of seasonal fruits and vegetables and the impact on the environment<br>▫ Suggesting points for improvement when making a seasonal tart<br>▫ Evaluating an end product and thinking of other ways in which to create similar items<br>▫ Analysing and evaluating an existing product<br>▫ Identifying the key features of a pouch | net, disassemble, packaging, shapes, strength, materials, evaluate, suggestions |
| Year 4 | ▫ Evaluating structures made by the class<br>▫ Describing what characteristics of a design and construction made it the most effective<br>▫ Considering effective and ineffective designs<br>▫ Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance<br>▫ Evaluating a recipe, considering: taste, smell, texture and appearance<br>▫ Describing the impact of the budget on the selection of ingredients<br>▫ Evaluating and comparing a range of products<br>▫ Testing and evaluating an end product against the original design criteria<br>▫ Deciding how many of the criteria should be met for the product to be considered successful<br>▫ Suggesting modifications for improvement<br>▫ Articulating the advantages and disadvantages of different fastening types<br>▫ Suggesting modifications | net, disassemble, packaging, shapes, evaluate, durability, net design, strength, materials, suggestions |
| Year 5 | ▫ Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary<br>▫ Suggesting points for improvements for own bridges and those designed by others<br>▫ Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses | decorative techniques, project, finishing techniques, triangulation, strength, evaluate, |

| | | |
|---|---|---|
| | ▫ Determining which parts of a product affect its function and which parts affect its form<br>▫ Analysing whether changes in configuration positively or negatively affect an existing product<br>▫ Identifying the nutritional differences between different products and recipes<br>▫ Identifying and describing healthy benefits of food groups<br>▫ Stating an event or fact from the last 100 years of plastic history<br>▫ Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices<br>▫ Explaining key functions in my program (audible alert, visuals)<br>▫ Explaining how my product would be useful for an animal carer including programmed features | critically, improve, suggestions, design criteria/target group |
| Year 6 | ▫ Improving a design plan based on peer evaluation<br>▫ Testing and adapting a design to improve it as it is developed<br>▫ Identifying what makes a successful structure<br>▫ Evaluating the work of others and receiving feedback on own work<br>▫ Applying points of improvements<br>▫ Describing changes they would make/do if they were to do the project again<br>▫ Testing own and others finished games, identifying what went well and making suggestions for improvement<br>▫ Evaluating a recipe, considering: taste, smell, texture and origin of the food group<br>▫ Taste testing and scoring final products<br>▫ Suggesting and writing up points of improvements in productions<br>▫ Evaluating health and safety in production to minimise cross contamination<br>▫ Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool<br>▫ Developing an awareness of sustainable design<br>▫ Identifying key industries that utilise 3D CAD modelling and explain why<br>▫ Describing how the product concept fits the client's request and how it will benefit the customers<br>▫ Explaining the key functions in my program, including any additions<br>▫ Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool | decorative techniques, project, finishing techniques, triangulation, strength, evaluate, critically, improve, suggestions, design criteria/target group |

| | | |
|---|---|---|
| | ⁂ Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch<br><br>⁂ Demonstrating a functional program as part of a product concept | |

Christ Church CE VC Primary School

| KS1 | National Curriculum, key skills and knowledge - **Design and Technology - Structures**<br>**Structures – by the end of KS1 pupils should be able to:**<br>build structures, exploring how they can be made stronger, stiffer and more stable | |
|---|---|---|
| Year Group | Progression | Key Vocabulary |
| FS | I can balance blocks to build a bridge.<br>I can show increasing control over an object in pushing, patting.<br>I can push and pull apart larger construction pieces, such as, Duplo.<br>I can test out materials for building houses and castles.<br>I can explore materials for building houses.<br>I can explore which materials to use when building a bridge and ensuring that a goat can stand on the bridge without it falling down<br>I can use various construction materials. I<br>I can begin to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces.<br>I can join construction pieces together to build and balance.<br>I can use blocks to build structures with balance and symmetry.<br>I can construct with larger bricks (such as Duplo) to build models and add in details.<br>I know the properties of materials and their suitability for a particular purpose.<br>I can use blocks and construction pieces to create a replica Chinese building.<br>I can use blocks to build structures with balance, symmetry and with smaller detailed features.<br>I can construct with smaller bricks (such as Lego) to build models and add in details.<br>I can represent my own ideas, thoughts and feelings through design and technology.<br>I can build a castle. | Balance, blocks, bridge, object, push, pat, pull, apart, test, material, building, explore, weight, strong, weak, stack, enclosure, create, space, join, |
| Year 1 | ⁍ To understand that the shape of materials can be changed to improve the strength and stiffness of structures<br>⁍ To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses)<br>⁍ To understand that axles are used in structures and mechanisms to make parts turn in a circle<br>⁍ To begin to understand that different structures are used for different purposes<br>⁍ To know that a structure is something that has been made and put together<br>⁍ To know that a client is the person I am designing for<br>⁍ To know that design criteria is a list of points to ensure the product meets the clients needs and wants | construction, explore, slider, simple moving image |

| | | |
|---|---|---|
| | ▫ To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity<br>▫ To know that windmill turbines use wind to turn and make the machines inside work<br>▫ To know that a windmill is a structure with sails that are moved by the wind<br>▫ To know the three main parts of a windmill are the turbine, axle and structure | |
| Year 2 | ▫ To know that materials can be manipulated to improve strength and stiffness<br>▫ To know that a structure is something which has been formed or made from parts<br>▫ To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move<br>▫ To know that a 'strong' structure is one which does not break easily<br>▫ To know that a 'stiff' structure or material is one which does not bend easily | Structure, stable, rigid, 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 |
| KS2 | National Curriculum, key skills and knowledge - **<u>Design and Technology - Structures</u>**<br>**Structures – by the end of KS2 pupils should be able to:**<br>apply their understanding of how to strengthen, stiffen and reinforce more complex structures | |
| Year Group | Progression | Key Vocabulary |
| Year 3 | ▫ To understand that wide and flat based objects are more stable<br>▫ To understand the importance of strength and stiffness in structures<br>▫ To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose<br>▫ To know that a façade is the front of a structure<br>▫ To understand that a castle needed to be strong and stable to withstand enemy attack<br>▫ To know that a paper net is a flat 2D shape that can become a 3D shape once assembled<br>▫ To know that a design specification is a list of success criteria for a product | reclaimed, recycled materials, purpose, structure, |
| Year 4 | ▫ To understand what a frame structure is<br>▫ To know that a 'free-standing' structure is one which can stand on its own<br>▫To know that a pavilions is a decorative building or structure for leisure activities<br>▫ To know that cladding can be applied to structures for different effects.<br>▫ To know that aesthetics are how a product looks<br>▫ To know that a product's function means its purpose<br>▫ To understand that the target audience means the person or group of people a product is designed for<br>▫ To know that architects consider light, shadow and patterns when designing | reclaimed, recycled, materials, purpose, Girder, rafter, strut 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 |

| | | |
|---|---|---|
| Year 5 | ▫ To understand some different ways to reinforce structures<br>▫ To understand how triangles can be used to reinforce bridges<br>▫ To know that properties are words that describe the form and function of materials<br>▫ To understand why material selection is important based on their properties<br>▫ To understand the material (functional and aesthetic) properties of wood<br>▫ To understand the difference between arch, beam, truss and suspension bridges<br>▫ To understand how to carry and use a saw safely | reclaimed, recycled, materials, purpose, Girder, rafter, strut shell structure, Net, template, structure, frame. Measure, record, strengthen, load, capacity, loadbearing, materials |
| Year 6 | ▫ To know that structures can be strengthened by manipulating materials and shapes<br>▫ To understand what a 'footprint plan' is<br>▫ To understand that in the real world, design , can impact users in positive and negative ways<br>▫ To know that a prototype is a cheap model to test a design idea | Member, cross brace, cantilever, frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent |

Christ Church CE VC Primary School

| KS1 | National Curriculum, key skills and knowledge - **Design and Technology -Textiles** | |
|---|---|---|
| Year Group | Progression | Key Vocabulary |
| FS | I can show increasing control over an object in pushing.<br>I can thread larger beads on to string.<br>I can push string in and out of a threading card.<br>I can push smaller beads on to a string.<br>I can weave string in and out on a threading card<br>I can thread with wool. | Control, object, push, thread, large, string, beads, pull, weave, wool |
| Year 1 | ⁍ To know that 'joining technique' means connecting two pieces of material together<br>⁍ To know that there are various temporary methods of joining fabric by using staples. glue or pins<br>⁍To understand that different techniques for joining materials can be used for different purposes<br>⁍ To understand that a template (or fabric pattern) is used to cut out the same shape multiple times<br>⁍ To know that drawing a design idea is useful to see how an idea will look | joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish, thread, equipment, hole punched holes, cotton reels, shoelaces, create, peg board, pegs |
| Year 2 | ⁍ To know that sewing is a method of joining fabric<br>⁍ To know that different stitches can be used when sewing<br>⁍ To understand the importance of tying a knot after sewing the final stitch<br>⁍ To know that a thimble can be used to protect my fingers when sewing | joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish |
| KS2 | National Curriculum, key skills and knowledge - **Design and Technology -Textiles** | |
| Year Group | Progression | Key Vocabulary |
| Year 3 | ⁍To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric<br>⁍To know that when two edges of fabric have been joined together it is called a seam<br>⁍To know that it is important to leave space on the fabric for the seam<br>⁍To understand that some products are turned inside out after sewing so the stitching is hidden | fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance, thread, wide eyelet needle, threading grids, threading patterns, cross stitch, running stitch |
| Year 4 | ⁍ To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro | thread, wide eyelet needle, binka, simple sewing product, cross stitch, running stitch, |

| | | |
|---|---|---|
| | ⁂ To know that different fastening types are useful for different purposes<br>⁂ To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions | back stitch, whipping stitch, weaving, loom, knit, casting on/off |
| Year 5 | N/A not done in year 5 | |
| Year 6 | N/A not done in year 6 | |

Christ Church CE VC Primary School

| KS1 | National Curriculum, key skills and knowledge - **Design and Technology Mechanisms/Mechanical Systems**<br>**Mechanisms/mechanical systems – by the end of KS1 pupils should be able to:**<br>explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. | |
|---|---|---|
| Year Group | Progression | Key Vocabulary |
| FS | I can show increasing control over an object in pushing, patting.<br>I can push and pull apart larger construction pieces, such as, Duplo.<br>I can twist to put something on or off, such as, a lid.<br>I can use various construction materials, such as Mobilo to create moving creations.<br>I know the properties of materials and their suitability for a particular purpose.<br>I can use a split pin to create an egg that open and closes.<br>I can safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.<br>I can use what I have learnt about media and materials in original ways, thinking about uses and purposes.<br>I can represent my own ideas, thoughts and feelings through design and technology. | Control, push, pull, pat, object, apart, twist, on, off, lid, materials, create, moving, creation, split pin, open, close, safely, explore, tools, experiment, texture, represent |
| Year 1 | ⍟ To know that a mechanism is the parts of an object that move together<br>⍟To know that a slider mechanism moves an object from side to side<br>⍟ To know that a slider mechanism has a slider, slots , guides and an object<br>⍟ To know that bridges and guides are bits of card that purposefully restrict the movement of the slider<br>⍟ To know that in Design and technology we call a plan a 'design'<br>⍟ To know that wheels need to be round to rotate and move<br>⍟ To understand that for a wheel to move it must be attached to a rotating axle<br>⍟ To know that an axle moves within an axle holder which is fixed to the vehicle or toy<br>⍟ To know that the frame of a vehicle (chassis) needs to be balanced ⍟ To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles | slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards |
| Year 2 | ⍟ To know that different materials have different properties and are therefore suitable for different uses<br>⍟ To know the features of a ferris wheel include the wheel, frame, pods, a base an axle and an axle holder<br>⍟ To know that it is important to test my design as I go along so that I can solve any problems that may occur<br>⍟ To know that mechanisms are a collection of moving parts that work together as a machine to produce movement<br>⍟ To know that there is always an input and output in a mechanism<br>⍟ To know that an input is the energy that is used to start something working | vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used, simple levers, simple moving image, lever |

| | | |
|---|---|---|
| | ▫ To know that an output is the movement that happens as a result of the input<br>▫ To know that a lever is something that turns on a pivot<br>▫ To know that a linkage mechanism is made up of a series of levers<br>▫ To know some real-life objects that contain mechanisms | |
| KS2 | National Curriculum, key skills and knowledge - **Design and Technology Mechanisms/Mechanical Systems**<br>**Mechanisms/mechanical systems – by the end of KS2 pupils should be able to:**<br>understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] | |
| Year Group | Progression | Key Vocabulary |
| Year 3 | ▫ To understand how pneumatic systems work<br>▫ To understand that pneumatic systems can be used as part of a mechanism<br>▫ To know that pneumatic systems operate by drawing in, releasing and compressing air<br>▫ To understand how sketches, drawings and diagrams can be used to communicate design ideas<br>▫ To know that exploded-diagrams are used to show how different parts of a product fit together<br>▫ To know that thumbnail sketches are small drawings to get ideas down on paper quickly | mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating |
| Year 4 | ▫ To know that air resistance is the level of drag on an object as it is forced through the air<br>▫ To understand that the shape of a moving object will affect how it moves due to air resistance.<br>▫ To know that aesthetics means how an object or product looks in design and technology<br>▫ To know that a template is a stencil you can use to help you draw the same shape accurately<br>▫ To know that a birds-eye view means a view from a high angle (as if a bird in flight)<br>▫ To know that graphics are images which are designed to explain or advertise something<br>▫To know that it is important to assess and evaluate design ideas and models against a list of design criteria. | Slider, lever, horizontal, vertical, pneumatic, cam, rotary, motion, linear |
| Year 5 | ▫ To know that mechanisms control movement<br>▫ To understand that mechanisms that can be used to change one kind of motion into another<br>▫ To understand how to use sliders, pivots and folds to create paper-based mechanisms<br>▫ To know that a design brief is a description of what I am going to design and make<br>▫ To know that designers often want to hide mechanisms to make a product more aesthetically pleasing | 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 designs, investigate, investigations, |
| Year 6 | ▫ To understand that the mechanism in an automata uses a system of cams, axles and followers<br>▫ To understand that different shaped cams produce different outputs<br>▫ To know that an automata is a hand powered mechanical toy<br>▫ To know that a cross-sectional diagram shows the inner workings of a product<br>▫ To understand how to use a bench hook and saw safely | simple pulley system, designs, investigate, investigations, mechanical, motor, drill, |

| | | |
|---|---|---|
| | ❀ To know that a set square can be used to help mark 90° angles | |

Christ Church CE VC Primary School

| KS2 | National Curriculum, key skills and knowledge - **Design and Technology – Electrical Systems**<br>**Electrical systems – by the end of KS2 pupils should be able to:**<br>understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]<br>apply their understanding of computing to program, monitor and control their products. | |
|---|---|---|
| Year Group | Progression | Key Vocabulary |
| Year 3 | N/A not covered in Year 3 | |
| Year 4 | ⁍ To know that an electrical circuit must be complete for electricity to flow<br>⁍ To know that a switch can be used to complete and break an electrical circuit<br>⁍ To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens<br>⁍ To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison | 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 |
| Year 5 | ⁍ To know that series circuits only have one direction for the electricity to flow<br>⁍ To know when there is a break in a series circuit, all components turn off<br>⁍ To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin<br>⁍ To know a motorised product is one which uses a motor to function<br>⁍ To know that product analysis is critiquing the strengths and weaknesses of a product<br>⁍ To know that 'configuration' means how the parts of a product are arranged | Switch, circuit, current, component, light, sensor, electricity, , 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 |
| Year 6 | ⁍ To know that batteries contain acid, which can be dangerous if they leak<br>⁍ To know the names of the components in a basic series circuit including a buzzer<br>⁍ To understand the diagram perspectives 'top view', 'side view' and 'back' | 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 |

Christ Church CE VC Primary School

| KS1 | National Curriculum, key skills and knowledge - **Design and Technology – cooking and nutrition**<br>**Cooking and nutrition – by the end of KS1 pupils should be able to:**<br>use the basic principles of a healthy and varied diet to prepare dishes<br>understand where food comes from. | |
|---|---|---|
| Year Group | Progression | Key Vocabulary |
| FS | I can use a knife to spread.<br>I can talk about putting some ingredients together to make food when making porridge, bread<br>I know I need to use equipment to weigh/measure ingredients.<br>I can stir to mix ingredients together.<br>I know people enjoy different types of foods.<br>I know there are different flavours of food and can describe some of these.<br>I understand that equipment and tools have to be used safely.<br>I can usually manage washing and drying hands.<br>I can show increasing control over an object in pushing and patting.<br>I can pour from a jug into a larger measuring cylinder without spilling.<br>I can eat my dinner with a knife and fork<br>I know to put flour down to stop dough sticking to the work surface.<br>I can use a knife to chop up some soft foods.<br>I can follow instructions to create a fruit salad.<br>I can add flavour to a pancake by spreading on sauce or squeezing on juice. I know how to melt chocolate. I can choose to eat a healthy range of foodstuffs and understand the need for variety in food.<br>I can show some understanding about good practices with regard to eating and hygiene.<br>I can show understanding of the need for safety when tackling new challenges and consider and manage some risks.<br>I can control finer tools when playing with dough.<br>I can spread with a knife<br>I know to add more flour when dough is too sticky or more water when it is too dry.<br>I can follow instructions to make biscuits.<br>I can roll out dough.<br>I can use biscuit cutters<br>I know the importance for good health, a healthy diet, and talk about ways to keep healthy.<br>I can use a knife to cut up some of my dinner.<br>I can use jugs/scoops/spoons with accuracy to get to a mark on a measuring cylinder/beaker/jug. | Fork, knife, spread, ingredients, make, porridge, equipment, weigh, measure, stir, mix, describe, equipment, tools, safely, wash, dry, control, object, push, pour, measuring cylinder, measure, spill, flour, dough, sticky, surface, chop, soft, instruction, create, fruit salad, pancake, sauce, melt, chocolate, risk, scoops, dry, cutter, healthy, mark, beaker |
| Year 1 | ⁂ Understanding the difference between fruits and vegetables<br>⁂ To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber)<br>⁂ To know that a blender is a machine which mixes ingredients together into a smooth liquid<br>⁂ To know that a fruit has seeds and a vegetable does not | meat, animals, fish, vegetables, fruit, plants, dairy products, yoghurt, cheese, |

| | | |
|---|---|---|
| | ▫ To know that fruits grow on trees or vines<br>▫ To know that vegetables can grow either above or below ground<br>▫ To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber) | milk, foods, sugar, fat, healthy, unhealthy, eat well<br>plate, hold, knife, simple bridge hold, peel, cut, chop, spread, make |
| Year 2 | ▫ To know that 'diet' means the food and drink that a person or animal usually eats<br>▫ To understand what makes a balanced diet<br>▫ To know where to find the nutritional information on packaging<br>▫ To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar<br>▫ To understand that I should eat a range of different foods from each food group, and roughly how much of each food group<br>▫ To know that nutrients are substances in food that all living things need to make energy, grow and develop<br>▫ To know that 'ingredients' means the items in a mixture or recipe<br>▫ To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy<br>▫ To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars' | sources, food, meat, dairy, animals, fruit, vegetables, plants, farmed, grown, caught, natural food items, sugar, fat, man-made, artificial, healthy, unhealthy, snacks, teeth, eat well plate, healthier<br>food swap alternatives, proportions, food group, hold, knife, simple bridge hold, peel, cut, chop, evaluate, food product, aspects, taste, smell, appearance |
| KS2 | National Curriculum, key skills and knowledge - **Design and Technology – cooking and nutrition**<br>**Cooking and nutrition – by the end of KS2 pupils should be able to:**<br>understand and apply the principles of a healthy and varied diet<br>prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques<br>understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. | |
| Year Group | Progression | Key Vocabulary |
| Year 3 | ▫ To know that not all fruits and vegetables can be grown in the UK<br>▫ To know that climate affects food growth<br>▫ To know that vegetables and fruit grow in certain seasons<br>▫ To know that cooking instructions are known as a 'recipe'<br>▫ To know that imported food is food which has been brought into the country<br>▫ To know that exported food is food which has been sent to another country.<br>▫ To understand that imported foods travel from far away and this can negatively impact the environment<br>▫ To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre<br>▫ To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health<br>▫ To know safety rules for using, storing and cleaning a knife safely<br>▫ To know that similar coloured fruits and vegetables often have similar nutritional benefits | food health, safety, hygiene, health and safety rules, cooking, savoury foods, sweet foods, food products, research, plan, planning, grown, farmed, caught, eat well plate, carbohydrates, vegetables, fruits, key aspects, equipment, ingredients, instructions, preparing, cooking, prepare, cook, cooking techniques, chopping, kneading, grating, mixing |
| Year 4 | ▫ To know that the amount of an ingredient in a recipe is known as the 'quantity'<br>▫ To know that it is important to use oven gloves when removing hot food from an oven<br>▫ To know the following cooking techniques: sieving, creaming, rubbing method, cooling<br>▫To understand the importance of budgeting while planning ingredients for biscuits | food health, safety, hygiene, health and safety rules, cooking, savoury foods, sweet foods, food products, research, inform, planning, grown, farmed, caught, eat |

| | | |
|---|---|---|
| | | well plate, carbohydrates, vegetables, fruits, key aspects, equipment, ingredients, instructions, preparing, cooking, prepare, cook, premade plan, recipe, cooking techniques, chopping, kneading, grating, mixing |
| Year 5 | ⁍ To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues<br>⁍ To know that I can adapt a recipe to make it healthier by substituting ingredients<br>⁍ To know that I can use a nutritional calculator to see how healthy a food option is<br>⁍ To understand that 'cross-contamination' means that bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects | preparation, food products, raw meats, stored, prepare, cooking, packaging, cooked, create, plan, prepare, cook, heat source, cooking techniques, chopping, kneading, grating, mixing |
| Year 6 | ⁍ To know that 'flavour' is how a food or drink tastes<br>⁍ To know that many countries have 'national dishes' which are recipes associated with that country<br>⁍ To know that 'processed food' means food that has been put through multiple changes in a factory<br>⁍ To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides<br>⁍ To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork | preparation, food products, raw meats, stored, prepare, cooking, packaging, cooked, create, plan, prepare, cook, heat source, cooking techniques, chopping, kneading, grating, mixing |

Christ Church CE VC Primary School

| KS2 | National Curriculum, key skills and knowledge - **Design and Technology – Digital world** | |
|---|---|---|
| Year Group | Progression | Key Vocabulary |
| Year 3 | ▫ To understand that in programming a 'loop' is code that repeats something again and again until stopped<br>▫ To know that a Micro:bit is a pocket-sized, codeable computer ▫ Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm<br>▫To know what the 'Digital Revolution' is and features of some of the products that have evolved as a result<br>▫To know that in Design and technology the term 'smart' means a programmed product<br>▫To know the difference between analogue and digital technologies<br>▫ To understand what is meant by 'point of sale display'<br>▫ To know that CAD stands for Computer-aided design | |
| Year 4 | N/A Not covered in Year 4 | |
| Year 5 | ▫ To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record<br>▫ To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose<br>▫ To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met<br>▫ To understand key developments in thermometer history<br>▫ To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future<br>▫ To know the 6Rs of sustainability<br>▫ To understand what a virtual model is and the pros and cons of traditional vs CAD modelling | |
| Year 6 | ▫ To know that accelerometers can detect movement<br>▫ To understand that sensors can be useful in products as they mean the product can function without human input<br>▫ To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request<br>▫ To know that 'multifunctional' means an object or product has more than one function<br>▫ To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing | |