

=



Sacred Heart Catholic Primary School

Key Learning in Design Technology



National Curriculum Requirements

National Curriculum Aims	
The National Curriculum for Design 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. • To 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. • To critique, evaluate and test their ideas and products and the work of others. The National Curriculum for Cooking and Nutrition: - • To understand and apply the principles of nutrition and learn how to cook. • As part of their work with food pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a human life skill that enables pupils to feed themselves and others affordably and well, now and in later life.	
Subject Content Through a variety of creative 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, leisure, culture, enterprise, gardens and playground, the local community, industry and the wider environment.	

KS1	KS2
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.	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 (CAD).
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.	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.

KS1	KS2
Evaluate Explore and evaluate a range of existing products Evaluate their ideas and products against design criteria.	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 technology have helped shape the world.
Technical Knowledge Build structures, exploring how they can be made stronger, stiffer and more stable. Explore and use mechanisms, for example, levers, sliders, wheels, axles, in their products.	Technical Knowledge Apply their understanding of how to strengthen, stiffen, 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.
Cooking and Nutrition Use the basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from.	Cooking and Nutrition Understand and apply the principles of a healthy and varied diet. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Skills Progression

Year 1 and 2			
Year 1 & 2	Design	Make	Evaluate
	♣ Use pictures and words to convey what they want to design/make. ♣ Propose more than one idea for their product. ♣ Use kits/reclaimed materials to develop more than one idea. ♣ Model ideas / make mock-ups with kits, reclaimed materials. ♣ Select appropriate technique explaining: First... Next... Last.... ♣ Explore ideas by rearranging materials/ingredients. ♣ Select pictures to help develop ideas. ♣ Use drawings to record ideas as they are developed. ♣ Add notes to drawings to help explanations. ♣ Use ICT to communicate their ideas. ♣ Describe their models and drawings of ideas and intentions	♣ Discuss their work as it progresses. ♣ Select materials/ingredients from a limited range that will meet the design criteria. ♣ Select and name the tools needed to work the materials/ingredients. ♣ Explain what they are making. ♣ Explain which materials/ingredients they are using and why. ♣ Name the tools they are using. ♣ Describe what they need to do next.	♣ Explore existing products and investigate how they have been made. ♣ Decide how existing products do/do not achieve their purpose. ♣ Talk about their design as they develop and identify good and bad points. ♣ Note changes made during the making process as annotation to plans/drawings. ♣ Say what they like and do not like about items they have made and attempt to say why. ♣ Discuss how closely their finished product meets their design criteria and how well it meets the needs of the user

	Autumn Term	Spring Term	Summer Term
Year 1	Mechanisms Levers and Sliders Unit Outcome <i>To design and make a Christmas card with a pop up part.</i> • Use levers and sliders to make things move in 2D • Fasten paper and card together • Join appropriately for different materials (e.g. glue, tape etc.) • Insert paper fasteners.	Structures Stability and Strength Unit Outcome <i>Design and make a home or shelter</i> • Explore how to make structures stronger. • Techniques for stiffening materials • Join appropriately for different materials (e.g. glue, tape etc.) • Mark out materials to be cut.	Food Cooking and Nutrition Unit Outcome <i>Making fruit Melody Pots.</i> • Develop a food vocabulary. • Group foods together (fruit and vegetables.) • Preparing fruit and vegetables • Cut and chop.
Year 2	Mechanisms Wheels and axels Make moving vehicles Unit Outcome <i>Design and make a vehicle with moving wheels</i> • Rolling, folding, tearing and cutting paper • Join appropriately for different materials. • Try out different axel fixings/ strengths and weaknesses. • Make vehicles with construction kits which contain free running wheels. • Create models with wheels. • Attach wheels to a chassis using an axel.	Textiles Joining and decorating fabrics Unit Outcome <i>Make a hand puppet to help re-tell a story.</i> • Start to use the appropriate vocabulary to refer to fabrics and tools. • Cut out shapes which have been created by drawing round a template onto the fabric. • Join fabrics by using e.g. running stitch, glue, staples, over sewing, tape. • Decorate fabrics with attached items e.g. buttons, beads, sequins, braids, ribbons. • Colour fabrics using a range of techniques e.g. fabric paints, printing, painting.	Food Cooking and Nutrition Unit Outcome <i>Design a meal using ingredients we have grown in the school garden (Crunchy salad pots)</i> <i>Linked to science in Summer 1 Plants</i> • Develop a wider food vocabulary. • Explain where food comes from • Understand the need for a variety of foods in a diet (Know about the Eatwell Plate) • Measure and weigh food items using non-standard units. • Cut, peel, grate, chop and weigh

Year 3 and 4			
Year 3 & 4	Design	Make	Evaluate
Design, make and evaluate skills to be taught ongoing through every topic throughout the year	♣ Develop more than one design or adaptation of an initial design. ♣ Plan a sequence of actions to make a product. ♣ Record the plan by drawing using annotated sketches. ♣ Begin to use cross-sectional and exploded diagrams. ♣ Use prototypes to develop and share ideas. ♣ Think ahead about the order of their work and decide upon tools and materials/ingredients. ♣ Propose realistic suggestions as to how they can achieve their design ideas. ♣ Consider aesthetic qualities of materials/ingredients chosen. ♣ Use CAD where appropriate.	- Prepare pattern pieces as templates for their design. ♣ Cut slots. ♣ Cut internal shapes. ♣ Select from a range of tools for cutting shaping joining and finishing. ♣ Use tools with accuracy. ♣ Select from techniques for different parts of the process. ♣ Select from materials according to their functional properties. ♣ Plan the stages of the making process. ♣ Use appropriate finishing techniques.	♣ Investigate similar products to the one to be made to give starting points for a design. ♣ Draw/sketch products to help analyse and understand how products are made. ♣ Research needs of user. ♣ Identify the strengths and weaknesses of their design ideas in relation to purpose/user. ♣ Decide which design idea to develop. ♣ Consider and explain how the finished product could be improved. ♣ Discuss how well the finished product meets the design criteria of the user. ♣ Investigate key events and individuals in Design and Technology

	Autumn Term	Spring Term	Summer Term
Year 3	Mechanical Systems Levers and Linkages Unit Outcome <i>Create an information poster with moving levers and linkages to retell the Nativity Story.</i> • Use mechanical systems such as gears, pulleys, levers and linkages. • Use lolly sticks and card to make levers and linkages. • Use linkages to make movement. • Use ICT to program/control products.	Textiles Strengthening and Sewing Unit Outcome <i>Design and sew a bendy bag</i> • Understand seam allowance • Join fabrics using stitches. • Explore strengthening and stiffening fabrics. • Explore fastenings • Sew on a button.	Food Food and Nutrition Unit Outcome <i>Create a balanced snack to keep us healthy linked to the Eatwell Plate. (Healthy veg skewers)</i> • Learn food groups by developing an Eatwell Plate. • Sort foods into food groups. • Explore seasonality of fruit and vegetables. • Follow instructions to join and combine ingredients.
Year 4	Structures Shell/Frame Structures Unit Outcome <i>Design, make and strengthen a Christmas Gift Box. to carry a biscuit.</i> • Create shell or frame structures. • Strengthen frames with diagonal struts. • <Make structures more stable by giving them a wide base. Measure and mark square section, strip and dowel to 1cm.	Electrical Systems Electrical Circuits Unit Outcome <i>Design and make a torch containing an electrical circuit with a switch.</i> • Use electrical systems such as switches, bulbs and buzzers, • Incorporate a circuit into a model/product. • Use ICT to program and control products.	Food Cooking and Nutrition Unit Outcome <i>Design a sandwich with a savoury filling.</i> • Analyse the taste, texture and smell of a range of savoury foods. • Make healthy eating choices based on the Eatwell plate. • Join and combine a range of ingredients. • Follow a recipe to prepare and cook food. • Know wherein the world a range of different foods come (linked to Geography)

			Develop and understanding of how meat and fish are reared/caught.
--	--	--	---

Year 5 and 6			
Year 5 & 6	Design	Make	Evaluate
Design, make and evaluate skills to be taught ongoing through every topic throughout the year	- List tools needed before starting the activity. - Plan the sequence of work e.g. using a storyboard. - Record ideas using annotated diagrams. - Use models, kits and drawings to help formulate design ideas. - Combine modelling and drawing to refine ideas. - Devise step by step plans which can be read / followed by someone else. - Use exploded diagrams and cross-sectional diagrams to communicate ideas. - Sketch and model alternative ideas. - Decide which design idea to develop. - Use and understand the importance of CAD.	- Make prototypes. - Develop one idea in depth. - Use researched information to inform decisions. - Produce detailed lists of ingredients / components / materials and tools. - Use a computer to model ideas. - Select from and use a wide range of tools. - Cut accurately and safely to a marked line. - Select from and use a wide range of materials. - Use appropriate finishing techniques for the project. - Refine their product – review and rework/improve.	- Research and evaluate existing products (including book and web based research). - Consider user and purpose. - Identify the strengths and weaknesses of their design ideas. - Give a report using correct technical vocabulary. - Consider and explain how the finished product could be improved related to design criteria. - Discuss how well the finished product meets the design criteria of the user. Test on the user! - Understand how key people have influenced design.

	Autumn Term	Spring Term	Summer Term
Year 5	Textiles 3D product from a pattern. Unit Outcome <i>Design and make a waterbottle holder for an explorer.</i> • Use pattern pieces and seam allowance to create 3D product. • Pin and tack fabric pieces. • Join fabrics using sewing. • Understand pattern layout.	Mechanical Systems Cams, Pulleys and Gears Unit Outcome <i>Design and make a game with moving cams and gears.</i> • Develop a technical vocabulary appropriate to the project. • Use mechanical systems such as cams, gears and pulleys.	Food Food and Nutrition Unit Outcome <i>Design a meal from another culture. (Possibly linked to history.)</i> • Prepare a wider range of food products. • Weigh and measure using scales. • Select/prepare foods for a particular purpose. • Know where and how ingredients are processed.
Year 6	Structures Build/Reinforce Building Bridges. Unit Outcome <i>Design and build a bridge</i> • Use correct terminology for tools, materials and processes. • Use bradawl to mark hole positions. • Cut strip wood, dowel, square section wood to 1mm. • Join materials. • Build frameworks to support mechanisms. • Stiffen and reinforce complex structures.	Electrical Systems Motors Unit Outcome <i>Fairground Ride</i> <i>Design and make a motorised fairground ride.</i> • Develop a technical appropriate to the project. • Use electrical systems such as motors. • Program, monitor and control products using ICT.	Food Cooking and Nutrition Unit Outcome <i>Follow a recipe to make a meal.</i> <i>Design meals using rations.</i> <i>Plan party food for end of WWII street party</i> • Design/Prepare savoury dishes taking into account their nutritional and sensory characteristics. (Healthy, balanced diet) • Use Eatwell Plate to apply ingredient choices. • Consider the influence of chefs e.g. Jamie Oliver and Hugh Fearnley-Whittingstall.