Copnor Primary School

Being a Designer

Copnor Primary School's high-quality design and technology curriculum is planned as a 7-year journey across the Primary School and, by using creativity and imagination, our pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Our pupils learn how to be resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

By the end of Key Stage 1, through a variety of creative and practical activities, our pupils will have been taught the knowledge, understanding and skills needed to engage in the process of designing and making. They will have worked in a range of relevant contexts, for example, the home and school, gardens and playgrounds.

Our pupils are taught to:	
Design	• design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
Make	• select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
Evaluate	• explore and evaluate a range of existing products • evaluate their ideas and products against design criteria
Technical Knowledge Mechanics and Electrics	• 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

By the end of Key Stage 2, through a variety of creative and practical activities, our pupils will have been taught the knowledge, understanding and skills needed to engage in the process of designing and making.

Our pupils are 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 / Mechanics and Electrics	• 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

Greater Depth' is achieved through a focus on **ACE** – tasks enable pupils to **A**pply, **C**onnect and **E**xplain (or **E**xplore) & **E**valuate

Apply	Pupils can apply skills, knowledge and understanding from their current, and previous, learning independently and in new contexts showing increased awareness, accuracy and detail.
Connect	Pupils can innovate, make clear, strong and appropriate links between their skills, knowledge and understanding and the new context.
Explain & **E**valuate	Pupils are able to explore and critically evaluate the effectiveness of their products and designs after independently using a variety of taught techniques, tools and materials.

	Year 1	Year 2	Year 3
Cooking / Nutrition	• I can cut food safely • I can mix and combine ingredients • I can talk about hygiene for cooking • I can explain how some things are dangerous to eat, such as when something is raw • I can explain what a recipe is • I can explain how heat changes food • I can make a simple snack • I can group familiar food into groups, including fruit, vegetables and meat	• I can describe why I need a variety of different foods in my diet • I can measure and weigh food items using informal methods or formally (with support) • I can use a variety of utensils safely • I can follow a simple recipe • I can combine ingredients in various ways. • I can apply hygiene rules to cooking • I can explain how some foods are made and some are natural • I know where some foods come from. • I can describe different cooking methods	• I can describe what I need to do to be hygienic • I can describe what I need to do to be safe • I can begin to read and understand food labels (main ingredients) • I can measure and weigh ingredients using formal methods • I can select ingredients based on a recipe • I understand what is healthy and unhealthy • I can combine two cooking processes to make a product I know where food comes from
Design	• I can think of ideas and with help can put them into practice • I know what a design is • I can use pictures and words to describe what I want to do	• I can think of ideas and, with some support, can put them into practice • I know what a design is and its purpose • I can use pictures and words to describe what I want to do, including materials, techniques, features, mechanics and tools	• I can think of ideas and plan, with some support, what to do next, based on what I know about materials and components • I can select tools, techniques and materials • I can explain my choices giving reasons
Construction	• I know what materials I can use for my product • I know what a join is. • I can measure and mark out materials (using non-standard measurements) • I can cut using scissors • I can follow instructions to make my product	• I know what materials and tools I can use for my product • I can use a join • I can measure and mark out materials with care and increasing accuracy • I can cut materials safely (scissors, junior hacksaw) • I can make my work look as neat as possible • I can make materials for my product stronger (folding, rolling and joining, columns and triangles)	• I can select and use appropriate materials • I can use an appropriate join • I can measure and mark out materials carefully and accurately (in cm) • I can use scoring and folding to shape materials accurately • I can make cuts accurately (scissors and saws) • I can make holes accurately (drill, punch) • I can use art skills to enhance the visual appeal of my product

Textiles	• I can describe textiles by the way they feel • I can make a simple product from textiles • I can cut fabric using a simple template • I can join fabrics using glue • I can start to join fabrics using a running stitch • I can make sure my work is neat and tidy • I can weave	• I know that textiles have different properties • I can select the appropriate textile so that it does the job I want it to • I can alter a textile to make it stronger • I can measure, mark out and cut fabric • I can join fabrics using running stitch.	• I can select the appropriate textile(s) for my product based on the properties of the material • I can measure, mark out and cut fabric in centimetres • I can use sharp scissors accurately and safely to cut textiles • I can choose the best methods of joining fabrics in order to create a product which is fit for purpose
Mechanics / Electrics	• I can explore how moving objects work • I can explain how wheels, axels, turning mechanisms, hinges and levers work • I can make a product that moves, using a turning mechanism (e.g. wheels, winding) or a lever or a hinge (to make a movement)	• I can explain fully how moving objects work • I can investigate wheels, axels, turning mechanisms, hinges and simple levers. • I can explain how the mechanism in my product works	• I can choose and make a mechanism to create movement • I can combine a number of components well in my product • I can ensure my product has a finish that a user will find it both useful and attractive
Evaluation of Products	• I can talk about what a product is • I can say what a product is for • I can describe a product (who is it for, what is made from, how is it made, how it works)	• I can describe the features of familiar products • I can give reasons for some features (colour, choice, material used and joining technique)	• I can start to research and evaluate existing products • I can understand that products are designed for a purpose (e.g. a problem, an audience, an event
Knowledge of Designers	• I can describe what a designer does • I can give my opinion on a product.	• I can name some designers from history and their products • I can say what I like and dislike about the product and the designer	• I can name some products and the names of British designers • I can talk about some of the tools and techniques used by the designer

	Year 4	Year 5	Year 6
Cooking / Nutrition	• I can explain what makes a healthy and balanced diet • I can understand that different foods and drinks provide different substances the body needs to be healthy and active • I can describe seasonality • I can describe how a variety of ingredients are grown, reared, caught and processed before being eaten • I can select ingredients for my product with reasons. • I can work in a safe, hygienic way • I can follow steps in a recipe using different methods (combining, melting, boiling and baking)	• I can explain what is an appropriate portion size • I can explain why it is important to eat regularly rather than skipping meals • I can understand some of the processes to get food from the farm to the plate • I can explain why I need certain food types and select ingredients based on this. • I understand food choices (veganism, vegetarianism) and food intolerances • I can follow several processes in a recipe • I can work in a safe, hygienic way and I am starting to plan my cooking processes to ensure these	• I can use the information on a food label to inform my choices • I can understand carbon footprint and its impact on the ingredients I select • I know different cultures have different diets and how these have influenced our own diet • I can adapt my recipe based on my audience and taste • I can work in a safe, hygienic way and I plan my cooking processes to ensure these
Design	• I can think of ideas and plan what to do next, based on what I know about materials and components • I can select the appropriate tools, techniques and materials explaining my choices • I can communicate my ideas using labelled sketches, giving reasons for my choices	• I can start to use my knowledge of design, designers and further research to help influence my own design • I can create simple models to show aspects of my design • I can produce step by step plans • I can come up with solutions to problems as they happen	• I can use my knowledge of design designers and further research to help influence my own design • I can create models or prototypes to show aspects of my design • I can produce detailed step-by-step plans • I can use computer aided design • I can anticipate problems and come up with solutions
Construction	• I can select and use appropriate materials, joins, folds and techniques • I can make cuts and holes accurately and precisely • I can join materials to make products using both permanent and temporary fastenings • I can make my methods of working increasingly precise, aiming for a high -quality finish • I can use my art skills to enhance the visual appeal of my product, bearing in mind the purpose and audience	• I can select from a variety of materials best suited to my design • I can measure using centimetres and millimetres • I can shape products accurately and precisely • I can make cuts accurately and reject pieces that are not accurate • I can ensure my joins are strong and stable, giving extra strength to my products • I can make some joins flexible • I can ensure my methods of working are precise so that products have a quality finish	• I can test my construction methods (materials, cuts, folds, joins) using a prototype • I can measure using cm and mm with increasing accuracy • I can shape products accurately and precisely, improving my technique • I can make cuts accurately and reject pieces that are not accurate and improve my technique • I can ensure my methods of working are precise so that products have a high-quality finish • I can use computer programming when creating a product

Textiles	• I can consider the advantages and disadvantages of material for a product • I can create and use a template or pattern to create an accurate product • I can use stitching to help create a product that is sturdy and fit for purpose • I can combine materials to add strength or visual appeal	• I can experiment with a range of materials until I find the most appropriate material for the product • I can consider the cost of the material • I can consider the visual appeal of the material • I can mark out using my own patterns and templates • I can join textiles to make a durable and desirable product • I can start to combine art skills to add colour and texture to my work	• I can experiment with a range of materials until I find the right mix of affordability, appeal and appropriateness for the job • I can show an awareness of commercial appeal, including within my products • I can mark out using my own patterns and templates, adapting them if needed • I can join textiles using art skills to make a more desirable product
Mechanics / Electrics	• I can explain the application of mechanisms to create movement I can use simple circuits to either illuminate or create motion • I can make a product that uses both electrical and mechanical components • I can ensure product has a good finish so that a user will find it both useful and attractive	• I have chosen components that can be controlled by switches • I can improve my product after testing • I can begin to use my science skills to alter the way my electrical products behave • I can begin to explain mechanical movement using hydraulics and pneumatics • I can use other DT skills to create housings for my mechanical components • I can ensure that my product is well finished in a way that would appeal to the user	• I have chosen components that can be controlled by computing equipment • I can improve my product after testing • I can use my science skills to alter the way my electrical products behave • I can use precise electrical connections • I can explain mechanical movement using hydraulics and pneumatics • I can use other DT skills to create housings for my mechanical components with competence • I can evaluate my product and whether it is finished in a way that would appeal
Evaluation of Products	• I can identify what is working well and what can be improved as I am working on the product • I can identify what is working well and what can be improved at the completion of the project	• I can reflect on my designs and develop them bearing in mind the way they will be used during the process • I can reflect on my final product and how it will be used	• I can reflect on my designs and adapt them based on testing and a prototype

Knowledge of Designers	• I can name some international designers • I can explain why a product is appealing	• I can compare and contrast the work of different designers • I can give reasons for the decisions made by the designer	• I can explain how key events and individuals have influenced the world (in terms of products) • I can start to think of new products and innovate my own ideas
Evaluation of own products	• I can identify what is working well and what can be improved as I am working on the product • I can identify what is working well and what can be improved at the completion of the project	• I can reflect on my designs and develop them bearing in mind the way they will be used during the process • I can reflect on my final product and how it will be used	• I can reflect on my designs and adapt them based on testing and a prototype