Design and Technology Curriculum Overview

PERRAN-AR-WORTHAL CP SCHOOL

Every Moment Matters

Purpose of study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, 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. Pupils learn how to take risks, becoming 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.

Aims

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.

Key stage 1

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 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.

Key stage 2

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.

Cooking and Nutrition

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 crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. Pupils should be taught to:

Key stage 1

• use the basic principles of a healthy and varied diet to prepare dishes

• understand where food comes from.

Key stage 2

• 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.

How we implement our design and technology curriculum.

At Perran-ar-worthal school, every child has the opportunity to participate in a wide and varied DT programme. This is part of our Fabulous Friday curriculum which, where possible, is closely linked to topic studies in other areas. For example, in Year 5 they learn about Earth and space in science and during the same term they construct a moving planetarium in DT. This cross curricular approach enables the children to experience using a range of practical design and technology skills whilst also reinforcing and applying the learning they have gained in other subjects.

The children will experience working with practical skills that include food, materials, textiles, electronics, computing (taught explicitly in a separate lesson) and construction and mechanics. They also have the opportunity to design, make, evaluate and improve their work whilst taking inspiration from other designers.

As part of their cooking in the curriculum programme, the children are also taught the importance of preparing their cooking area, clearing away and looking after their equipment. The focus on Healthy Eating and understanding the importance of choosing the right ingredients and method of cooking are developed within our curriculum to ensure pupils are being prepared for living a healthy lifestyle by making the right choices. We believe that learning how to eat and stay healthy is a life skill that must be taught from a very early age.

Year 5 and 6 are expected to start understanding how to budget and shop for necessary ingredients with limited waste. In the final half of the summer term, Year 6 are encouraged to take part in a 'Ready, Steady, Cook' competition which involves creating and refining recipes.

Where possible, our grow zone is used to grow ingredients that the children can harvest and use seasonally in their cooking. The emphasis is on the use of fresh produce. The children also are given the opportunity to develop a greater understanding of food that has cultural and religious roots enabling them to also make cross curricular links with their learning.

Timetable

Due to the coverage requirements for the design and technology curriculum, the children will follow the 'Fabulous Friday' timetable.

Design and Technology					
Autumn 1	Spring 1	Spring 2	Summer 1	Summer 2	Summer 2
Year 5	Year 1	Year 6	Year 3	Year 2	Year 4

Cooking					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 6	Year 3	Year 5	Year 4	Year 2	Year 1

	Exploration of ideas	Skills	Aspect
Year 1	**Moving pictures** Levers and pivots Wheel mechanisms Plan and design Making movies	Cut materials safely using tools provided. Measure and mark to the nearest cm. Demonstrate a range of cutting and shaping techniques. Create products using levels, wheels and winding mechanisms. Evaluate ideas	Materials/ constructing/ mechanics/ designing and making
Year 2	**Animal Puppet** Investigate puppets Finger puppets Design puppets Sewing skills Making puppet Evaluating	Shape textiles using templates. Join textiles using a running stitch. Colour and decorate textiles using a number of techniques. Identify likes and dislikes. Explore how products have been created.	Textiles/ construction/ designing and making/ taking inspiration
Year 3	**Wooden Labyrinths** Investigate levels of challenge Plan and design (practice sawing, drilling, gluing)	Cut materials with precision and refine the finish with appropriate tools. Show an understanding of the qualities of materials to choose appropriate tools to cut and shape. Develop a range of practical skills to create a product Decorate to make it appealing Evaluate a product.	Materials/ construction/ mechanics/ designing and making/ taking inspiration

	Exploration of ideas	Skills	Aspect
Year 4	**Kites** Paper art Paper making Making a prototype Create a product Evaluate	Cut materials with precision and refine the finish with appropriate tools. Show an understanding of the qualities of materials to choose appropriate tools to cut and shape. Develop a range of practical skills to create a product.	Materials/ construction/ designing and making/ taking inspiration
Year 5	**Book Binding** Design Binding	Understanding the different elements of a book. Fold the pages, group and bind together using French link and kettle stitch. Design the covers Attach end papers	Materials/ construction/ mechanics/ designing and making/ taking inspiration
Year 6	**Stem projects** 3D drawing Structures	Think like an engineer Construct thinking about strength, support and appeal. Thinking on different planes Working as a team using Skills Builder skills	Materials/ construction/ mechanics/ designing and making/ taking inspiration

	Exploration of ideas	Skills	Aspect
Year 1	Health Sandwich Carrot Muffins/ Toffee and Apple Muffins Toasted Cheese sandwiches (Forest School cooking) Link seasonality with science work on observing changes across the four seasons. Food groups—sorting and what they are for.	Cut, peel, grate ingredients safely and hygienically. Measuring/weighing ingredients using scales. Understanding where food comes from and seasonality. Food miles. Using knives safely.	Healthy eating and seasonal cooking—when is the right time to plant certain food. Portion sizes Understanding food groups.
Year 2	History of the potato and food from another continent Pea and Potato Samosas/ Tuna fish cakes Omelette in a bag/Cowboy Pasties (Forest School cooking) Sir Walter Raleigh brought potatoes back to Britain (link to work on Great Explorers)	Cut, peel, grate ingredients safely and hygienically. Measuring/weighing ingredients using scales. Understanding where food comes from and seasonality. Food miles. Using knives safely.	Why it is important to eat root vegetables in our diet. How best to grow root vegetables
Year 3	Tomato Soup with onion and garlic from grow zone Apple crumble– with healthy topping Link with Geography on France— Croque Monsieur/ Croque Madam (Forest school cooking)	Prepare ingredients hygienically using appropriate utensils. Measure ingredients to the nearest gram accurately. Follow a recipe. Assemble or cook healthy ingredients (controlling the temperature of the oven or hob, if cooking)	Seasonality of ingredients Healthy choices for crumble topping

	Exploration of ideas	Skills	Aspect
Year 4	Courgette and cheese soda bread Link with RE on Christianity—Hot cross buns/Saffron Buns Pizza (Forest school cooking)	Prepare ingredients hygienically using appropriate utensils. Measure ingredients to the nearest gram accurately. Follow a recipe. Assemble or cook healthy ingredients (controlling the temperature of the oven or hob, if cooking	Use of vegetables to flavour bread. Food allergies—gluten free soda bread. Introduction to microorganisms through live yogurt and it's healthy benefits
Year 5	Introduction of using fresh meat as an ingredient. Making pastry Quiche and sausage rolls Link with History on Ancient Greeks—Flat Bread and chargrilled vegetables (Forest School cooking) Link with Geography on food production and consumption—Global impact with use of meat, sustainability.	Understanding the importance of correct storage and handling of ingredients (using knowledge of microorganisms) Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. Demonstrate a range of baking and cooking techniques e.g. rubbing in for pastry. Create and refine recipes, including healthy seasonal ingredients, methods, cooking times and temperatures. Understand how a variety of ingredients are grown, reared, caught and processed. Understand and apply principles of a healthy band varies diet.	Use of fresh meat—safe handling and cooking. Alternative options to meat consumption.

Year 6	Sausage Pasta Seasonal Cottage Pie Link with RE on Judaism, Hanukkah—Potato Latkes (Forest School cooking)	Understanding the importance of correct storage and handling of ingredients (using knowledge of microorganisms) Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. Demonstrate a range of baking and cooking techniques e.g. rubbing in for pastry. Create and refine recipes, including healthy seasonal ingredients, methods, cooking times and temperatures. Understand how a variety of ingredients are grown, reared, caught and processed. Understand and apply principles of a healthy band varies diet.	Use of seasonal vegetables and five a day. Fresh tomato sauce—comparison of ingredients with ready made i.e. salt and sugar content