

Design and Technology Progression of Skills and Knowledge

Design and Technology

Purpose: 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.

The four areas involved in Design Technology are:



- Construction - process of making things like buildings and bridges. It involves planning what to build, gathering materials, and putting them together to create something new.



- Textiles - materials made from fibres like cotton or wool that we use to make clothes, blankets, and other fabric items. Learning about textiles helps us understand how different materials are made and how we can use them to create things we need in our daily lives.



- Mechanics - understanding about how things move and work, like how cars and bicycles move forward. By learning mechanics, we understand the forces that make objects go, stop, or change direction.



- Nutrition - understanding about the foods we eat and how they help our bodies grow and stay healthy. By learning about nutrition, we understand the importance of eating a balanced diet with fruits, vegetables, grains, proteins, and dairy products.

EYFS

Key cooking skills	Cooking outcomes	Key woodwork skills	Woodwork outcomes	Other key learning experiences
Measuring and adding ingredients, following a recipe, mixing ingredients together, spreading sauces and jams. Mixing different cooking ingredients to see how they react. sorting and washing seeds to roast. opening and investigating different fruits and vegetables	Baking cakes, cookies and pancakes. Making popcorn. Imaginative cooking in the home corner and the mud kitchen. Understanding change in food products when cooking. Making sandwiches	Using hammers, nail and manual drills. Stacking blocks in building while thinking about structures being stable, strong, using different materials for building, discussing what materials are best for different outcomes.	Building towers, bridges, rockets, vehicles and dens independently. Creating obstacle courses for themselves and other children.	Cutting skill in fine motor activities and help children to use scissors correctly. Threading beads or weaving using paper or thread. Tying a basic knot and beginning to learn to tie shoe laces

KS1 & KS2

Design	Make	Evaluate	Technical knowledge	Cooking and nutrition
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.	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.	Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria.	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.	Use the basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from.

KS1

Through a variety of creative and practical activities, pupils will be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating.

YEAR 1

Stable structures Car garage



Students will explore the features of stable structures, including toy car garages. They will test a range of material and make a decision for their end product. Student will be led through the design cycle to plan, construct and evaluate a car garage using the knowledge they have learnt about structures and materials

Flags



Students will investigate a range of flags and their features from around the world. They work with fabric to create one of the UK national flags. Students will practise early sewing skills. They will be led through the design cycle to design, construct and evaluate a flag for the school community.

Lever pop-ups Postcards



Students will learn and test different types of moving mechanisms, creating sliding mechanisms, levers, pivots and wheel mechanisms. They will be led through the design process to design, construct and evaluate a minibeast themed moving picture.

YEAR 2

Food From Around the World



Students will understand that people from around the world eat different types of food. They will survey to find what the favourite types of pizza are. Students will examine, describe and categorise a variety of bread-based products and topping that could be used on a pizza. They will be led through the design process to design, construct and evaluate a pizza they will like the taste of.

British Inventors



Students will investigate the invention of the telephone and test how telephone works and try different materials to create a telephone. They will explore the invention of reinforced concrete works. Students will investigate the invention of the mackintosh and test different materials to see which are waterproof. They will think of a problem they have in their life and imagine an invention that could solve it.

Fire Engines



Students will explore modern fire engines and equipment such as moving extendable ladders and hoses. They will investigate wheels, axles and chassis and ways of creating and the best way to create the body . They will be led through the design process to design, construct and evaluate a fire engine.

KS2

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]. In Nutrition units we aspire to instil a love of cooking. 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.

YEAR 3

Seasonal stockings



Students will explore and analyse existing products that we wear and understand how they are made. They will learn and practise different ways to join fabric and add designs and patterns using sewing skills. Students will also learn to thread a needle and safe serving technique. They will be led through the design process to design, construct and evaluate a seasonal stocking to make for the holidays.

Roman Chariots



Students will investigate Roman entertainment from a range of sources to discover what types of technology was used in this era. They will practise joining wheels and axles effectively to understand how it works, which parts need to be strong while other parts need to move and what material will be best to use. They will be led through the design process to design, construct and evaluate a Roman chariot that can be pulled and use patterns to decorate from that era.

Seasonal Food



Students will learn and understand what British ingredients are available all year round. They will learn where and how seasonal British fruits are grown and processed. Students will understand why vegetables are an important part of a healthy and varied diet. They will find out about how seasonally produced meat can form part of a healthy diet. They will learn how fish are caught or reared, processed and used in healthy meals. Students will use their learning to make a healthy and balanced dish using British ingredients.

YEAR 4

Flying machines



Students will research flying machines through the ages and see how the design has changed over the years. They will understand how flying machines can glide the different forces involved in flight. Students will design and build a simple glider to test forces in flight. Using knowledge they have learnt, students will use the design process to design, construct and evaluate a flying machine.

Light Up Signs









To investigate and analyse illuminated signs. To understand how LEDs may be used instead of traditional incandescent bulbs in series circuits. To develop ideas for a decorative illuminated sign. To select and use tools, equipment, materials and components to make the enclosure of a decorative illuminated sign. To construct a working circuit with one or more lights, and fit it in a decorative illuminated sign. To investigate ways in which computers can be used to program and control lights in a product.

Bridges



To explore ways in which pillars and beams are used to span gaps. To explore ways in which trusses can be used to strengthen bridges. To explore ways in which arches are used to strengthen bridges. To understand how suspension bridges are able to span long distances. To develop criteria and design a prototype bridge for a purpose.

YEAR 5				
<p>Designing a shelter for an explorer</p> 	<p>Students will explore the features of shelter structures, including those for cold environments. They design and plan a stable shelter structure that could support a person and their basic survival needs. Students will explore a range of materials and make decisions for what would be the best building material for a structure. Using knowledge they have learnt, students will use the design process to design, construct and evaluate a a explorer in a particular environment to provide safety, warmth and survival needs</p>	<p>Chinese Invention</p> 	<p>Students understand how the four great inventions (papermaking, printing, gunpowder and the compass) of China shaped the world and were spread and adapted over time. They will investigate water-powered machines such as water wheels. Students will use the design process to design, construct and evaluate a kite after learning how the Chinese used the kite in different ways throughout the eras.</p>	<p>Great British Dishes</p>  <p>Students will learn about and make some national English savoury dishes. they will know about and make some traditional English sweet dishes. Students will learn about and make some national Scottish dishes. They will learn about and make some national Welsh dishes. Students will learn about the influences of and similarities between cuisines from other countries to the UK. They will plan and shop for a British meal they have learnt about in one of the lessons.</p>
YEAR 6				
<p>Construct a car</p> 	<p>Students will research vehicle designs and parts are essential for making a car drive, turn and stop. They will begin to design a vehicle which will drive using information they have learnt so far. Students will build the internal moving parts of a vehicle to make it able to drive and turn. They will design the outer body of a vehicle to make it appealing to an audience. They will complete and test the vehicle and make any changes to fix any design problems. Students will program lights to flash using crumble boards to add to their vehicle to add lights, indicators or words.</p>	<p>Asia and African Foods</p> 	<p>Students will investigate the origins of some of our common foods to see where in the world they were first grown. They will investigate common dishes in Asia to see how their diet compares to European diets. They will investigate common dishes in Africa to see how their diet compares to European diets. Students will research an African or Asian they would like to make and share with others. Students will try different African and Asian dishes evaluating the different flavours they taste and where the dish is from.</p>	<p>Upcycling Fashion</p>  <p>Students will investigate and analyse items made using textiles:the materials used and how they are made. They will explore some ways in which textiles are joined and decorated. Students will design an item made using textiles, and draw pattern pieces. They will use pattern pieces to measure, mark and cut fabric, to sew design elements according to a design and join fabric pieces by hand sewing. Students will learn how to sew hems on an item made using textiles and add design details. They will evaluate work through a fashion parade and receive feedback from other students.</p>