



Progression through Design and Technology

Intent: 'Design, Make, Evaluate'

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.

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.

DESIGN TECHNOLOGY WILL BE TAUGHT PRIMARILY IN THE AUTUMN TERM (History) AND IN THE SUMMER TERM (Science)

When designing and making, pupils should be taught to:

	Key Stage 1	Key Stage 2
Design	<ul style="list-style-type: none"> -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 -explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. 	<ul style="list-style-type: none"> -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
Make	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -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	<ul style="list-style-type: none"> -explore and evaluate a range of existing products -evaluate their ideas and products against design criteria 	<ul style="list-style-type: none"> -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 generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
Food and Nutrition	<p>Key stage 1</p> <ul style="list-style-type: none"> -use the basic principles of a healthy and varied diet to prepare dishes and know where and how a variety of ingredients are grown, reared, caught and processed.understand where food comes from. <p>Key stage 2</p> <ul style="list-style-type: none"> -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. 	

Subject Content Skills

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>
<p>These skills will be achieved through using textiles, mouldable materials and structures (cardboard and wood). They should be taught in a range of relevant contexts, including home and school, garden and playgrounds, community, industry and the wider environment. Children should take inspiration from architects and designers.</p> <p align="center">All children will be taught to manage risks using a range of tools and processes, these will be risk assessed.</p> <p align="center">Children will always work safely and follow health and safety procedures.</p> <p align="center">All children should be taught to explain orally or in written form how they would improve or make changes to a product make changes to a product and reflect on this as part of their learning.</p>						
<u>Design</u>	<p>Talk about existing products and how they work.</p> <p>Talk about your ideas and draw a picture of what you will make.</p> <p>Use drawing and simple labels to plan a purposeful product.</p>	<p>Compare existing products and how they work.</p> <p>Use pictures, words and ICT to plan a purposeful product.</p> <p>Make a list of equipment I need. Plan how to make my product look appealing.</p> <p>Make a template to help me.</p>	<p>Compare existing products and consider how they work and why they have these features.</p> <p>As a class, create success criteria for their product. Develop their ideas through computer aided design and annotated sketches of different parts of the product.</p>	<p>Research existing products and evaluate their functionality.</p> <p>In groups, create success criteria for their product. Develop their ideas through computer aided design and exploded diagrams.</p>	<p>Research existing products and evaluate their functionality and their audience.</p> <p>Talk about a famous designer/architect and their work. In pairs, create success criteria for their product.</p> <p>Develop their ideas through cross sectional diagrams.</p>	<p>Widely research existing products and compare their functionality and how appealing they are. Understand how a designer has effected the world. Independently create success criteria for their product. Develop their ideas through computer aided design and by making prototypes (evaluate the prototype & modify designs if needed).</p>

Tools & Joining	<p>Cut accurately and safely with scissors</p> <p>Join appropriately using tape</p>	<p>Cut wood/dowel using a bench hook and hack saw</p> <p>Join appropriately with glue or tape and in different situations (e.g. axle)</p>	<p>Measure and mark a wooden dowel and cut using a hack saw</p> <p>Join fabrics using a running stitch</p>	<p>Cut internal shapes with scissors</p> <p>Use a glue gun with close supervision (1:1)</p>	<p>Cut accurately with scissors and saws safely to a marked line</p> <p>Use a glue gun with close supervision</p>	<p>Cut using a craft knife and cutting mat and safety ruler</p> <p>Join materials using the most appropriate method for the materials or purpose</p>
Mechanisms	Use wheels, axles, levers or sliders (e.g. use of split pins)	Create and use wheels, axles, levers or sliders	Create and use simple gears, pulleys and levers	Use cams or gears in their product		
<u>Make</u>	Practise the skills of cutting and joining before making final product, use construction materials and recyclable materials (wooden blocks, boxes, etc).	Practise the skills of cutting, shaping, joining and finishing before making final product using recyclable materials (boxes, etc). Choose appropriate equipment and materials from a given range.	Practise the skills of cutting, shaping, joining and finishing before making final product using mouldable materials (plasticine, etc.) Choose appropriate equipment and materials for their functional properties.	Practise the skills of cutting, shaping, joining and finishing before making final product use textiles. Choose appropriate equipment and materials for their functional properties and aesthetic qualities.	Demonstrate the skills of cutting, shaping, joining and finishing before making final product using wood. Choose the best materials and equipment.	Demonstrate the skills of cutting, shaping, joining and finishing before making final product use all materials taught to date. Use this to inform which skills they need to use to make their product. Choose the materials that are in budget and appealing. Use equipment skilfully.
Structures	Build simple structures Fold, tear, roll and cut paper and card	Improve structures by making them stronger, stiffer and more stable.	Create and use simple gears, pulleys and levers	Use cams or gears in their product		

		Create simple hinges and pop ups (e.g. cards)				
Evaluate	Talk about their product and what they did well.	Use the success criteria to record what they did well and what they could improve.	Use the success criteria to record what they did well and what they could improve.	Discuss in a group how the product meets the success criteria and act on suggestions on how to improve work.	Present their product to others and evaluate it against the functionality, marketability and how appealing it is.	Persuade others to buy their product.
Technical knowledge	Understand that a structure needs to be strong. Explore mechanisms (levers, sliders, wheels and axels)	Explore how to make a structure stronger. Use mechanisms (wheels and axels) in my products.	Apply their knowledge of how to strengthen complex structures. Use a slider mechanism in my product. Use a simple electrical circuit, including a bulb, in my product.	Use a lever and/or pulley mechanism. Use an electrical circuit, including a bulb, buzzer, or motor in my product.	Use a pulley mechanism in my product. Use a series circuit, with a range of components in my product. Using a computer, create a basic program to control your model.	Use a cam mechanism. Use a series circuit, with a range of components (including a switch) in my product. Create a program to control your model, include lights, buzzers and motors. Test your program before connecting it.
Cooking and nutrition	Understand what makes a healthy diet. Work safely and hygienically to prepare food.	Design and prepare healthy dishes and know where the food comes from. Work safely and hygienically.	Design a healthy dish, considering how the ingredients are grown or processed. Prepare a cold dish, using: washing, chopping, stirring and spreading skills, e.g. salad.	Design a healthy dish, considering how the ingredients are sourced. Prepare a hot savoury dish using a range of skills., e.g. pasta	Design a healthy dish, choosing appropriate ingredients that are in season. Make a hot savoury dish that has different parts, e.g. sausage roll	Design a healthy dish to meet the need of others, e.g. vegetarian, using in season ingredients. Design packaging for my product.
Preparing and cooking food	Measure and weigh food items using non-standard measures (e.g. spoons and cups)	Cut, peel, grate and chop a range of ingredients to make dishes from other countries	Combine a variety of ingredients using a range of cooking techniques	Measure and weigh ingredients appropriately to prepare and cook a range of dishes	Combine food ingredients appropriately (e.g. kneading, rubbing in and mixing)	Use appropriate tools and equipment, weighing and measuring with scales

Progression in Vocabulary – Design Technology

Year 1 Materials Food Tech Construction Textiles	Year 2 Materials Food Tech Construction Textiles	Year 3 Materials Food Tech Construction Textiles	Year 4 Materials Food Tech Construction Textiles	Year 5 Materials Food Tech Construction Textiles	Year 6 Materials Food Tech Construction Textiles
Planning Investigating Design Mark User Purpose Ideas Product Colour Decorate Cut Create Peeling Template Label Strong Sensory Vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard Unhealthy Healty Fold Joining Recycle Stitch Sew Needle Pattern	In addition to previous years: Assemble Function Criteria Model Appealing Axle Wheel Structure Sturdy Choosing Eye Catching Three Dimensional Ingredients	In addition to previous years: Annotated Sketch Critical Analysis Knead Roll Mix Measure Accuracy Yeast Stir Rub Whisk	In addition to previous years: Prototype Functional Innovative Design Brief Technique Utensil Weight Roll out	In addition to previous years: Grating Design specification Functionality Length Width Breadth Mechanics Frame Structure Reinforce Stability Temporary Permanent	In addition to previous years: Bake Degrees Scoring Carving

Design Specifications – Autumn Term (History)

Year Group - Project	Wow	Purpose	Materials	Helpful Links
Year 1 – Dinosaur Moving Head	Dinosaurs at Courthouse Green (green screen)	Create a moving dinosaur head to scare the dinosaurs away Use levers/split pins	Plastic Syringes Clear Tubing Shoe Boxes A4 Card Googly eyes	https://www.youtube.com/watch?v=5QqinrOcbIM (How to make a moving monsters) https://www.youtube.com/watch?v=vZ8M4Dh4fg (Pneumatic Moivng Monster)
Year 2 – Vegetable Soup or Broth	Message from Queen	Create a healthy recipe for the Queen’s guests to enjoy at the banquet	Vegetables and other ingredients needed Peelers Graters Cooking Pots Blenders Mixing Spoons Mixing Bowls	https://www.youtube.com/watch?v=Tge9pYYIwBo (Pickle Soup – My World Kitchen) https://www.youtube.com/watch?v=ibCYBpKL54M (5 Healthy Soups for Kids)
Year 3 – Well connected to the River Nile	River Nile Documentary Video	Design a water well that the Egyptians can use to collect water from the River Nile - Pulley and Lever	Bottle Pulley Wooden Skewers Cardboard Scissors Hot Glue Gun Lolly Pop Sticks Thread	https://www.youtube.com/watch?v=LiBcur1aqcg (What is a pulley?) https://www.youtube.com/watch?v=XGwFPsH5Z28 (Pulley Model) https://www.youtube.com/watch?v=W0mAzYBugCc (Ancient Eqgypt – River Nile Documentary BBC Teach) https://www.youtube.com/watch?v=aEK6PT7K8OM (Importance of River Nile)

Year 4 – Herb Bread	Tasting different herbs sent from Romans	Create a healthy savoury dish How are the ingredients sourced ?	Ingredients Mixing Bowls Sieve Mixing Spoons Measuring Scales	https://www.youtube.com/watch?v=rAcfWo1cdWg (How to make herb bread) https://www.youtube.com/watch?v=1zUW6sqbM-U (Bread – How it’s made for Kids)
Year 5 –Vegetable Pie	Letter from Henry VIII	Create a hot savoury dish (that has different parts) from vegetables that Henry VIII has been gifted from his friends What foods are in season? (e.g. root vegetables, potatoes)	Ingredients Rolling Pin Mixing Bowls Mixing Spoons Peelers Graters	https://www.youtube.com/watch?v=kfHludIsK_0 (What did Henny VIII eat?) https://www.youtube.com/watch?v=Tn4_CAQqG_U (Vegetable Pie) https://www.youtube.com/watch?v=FffOxORjsek (Easy Veggie Pot Pie)
Year 6 – War Tank	Video message/ Telegram from Soliders	Design a war tank that the soldiers can use. Use a cam and a series circuit, with a range of components (including a switch). Create a program to control your model, include lights, buzzers and motors. Test your program before connecting it.	Cams Spheros (prototype 1) Lights Buzzer Motor Switch Electric Wires Battery Corrugated plastic Card	https://www.youtube.com/watch?v=SdL55HWNPRM (How does a tank work?) https://www.youtube.com/watch?v=2vCLmxslavo (How to make a cam driven moving toy) https://www.youtube.com/watch?v=b_lzuzYz0jM (Moving Tank) https://www.youtube.com/watch?v=G4Ai9nxxITg (Cam)

Design specifications – Summer term (Science)

Year group project	Wow	Purpose	Materials	Helpful links
Year 1 – making a pizza	Message from Jack or core value champion to ask children to make pizzas use produce grown	Create a savoury snack for a visitor. Healthy and unhealthy foods. Measure with cups.	Cups Bowls Aprons Graters Spoons Knives Oven	https://www.bbc.co.uk/cbeebies/makes/something-special-make-a-pizza-with-justin (Choosing healthy toppings) https://www.bbcgoodfood.com/recipes/collection/kids-pizza-recipes (Pizza recipes and instructions)
Year 2 – wheelbarrow	Message from core value champion, they need to transport all of the food they have grown.	Create a new wheelbarrow that is strong enough to hold the crops. Cut, shape and join. Make materials stronger. Include wheels and axles.	Strong Secure Cut Assemble Function Criteria Axle Wheel Structure Sturdy Chassis	https://www.whitelath.leeds.sch.uk/school-blog/2017/11/10/year-2-building-a-model-wheelbarrow (Images and WAGOLL of wheelbarrow)
Year 3 – making a healthy snack	Email from younger children who need healthy snacks for lunch boxes.	Link to PSHCE – a healthy snack is needed for children’s packed lunches. Prepare, wash, chop, spread, etc. Combine ingredients.	Annotated Sketch Critical Analysis Knead Roll Mix Measure Stir Rub	

Year 4 – create a game.	Video message from reception – children need a new game to play to teach them about body parts.	Create a board game for children to play. Research and evaluate current products, cut internal shapes, use a glue gun, include electricity in the product.	Prototype Functional Innovative Design Brief Technique Electricity	https://www.instructables.com/How-to-Make-a-Custom-Operation-Game/ (Modelled example) https://www.science-sparks.com/makey-makey-operation-game/ (Written and step by step instructions to support)
Year 5 – make a moon buggy	Receive video message – moon buggy needed to move around when in space.	Create a moon buggy that moves independently. Research current products, create cross sectional diagrams. Use a saw and glue gun, be able to program my product.	Design specification Functionality Length Width Breadth Mechanics Frame Structure Reinforce Stability Temporary Permanent	https://www.lyonparkprimaryschool.co.uk/galleries/201819/year-5-dt-moon-buggy-project/ (School website with models) Many others available
Year 6 – healthy food	Create a healthy snack including food items that would aid good circulation. Receive email from a gym member.	Research and try foods that are good for circulation. Create a design brief. Weigh and measure. Design packaging, costings, etc.	Design specification Functionality Bake Degrees	