



Design and Technology Curriculum Overview

Fulwood and Cadley Primary School

The national curriculum purpose of study for Design and Technology:

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.

Design and Technology: School Statement of Intent

At Fulwood and Cadley Primary School we provide all children with learning opportunities to engage in design technology. We aim to provide a learning environment where children feel secure and are encouraged to creatively risk-take and problem solve. In DT lessons all children will develop the creative, technical, and practical expertise needed to perform everyday tasks confidently and to ultimately participate fully in the wider world. Through the DT curriculum, children should be inspired by engineers, designers, chefs and architects to enable them to create a range of structures, mechanisms, textiles, electrical systems and food products with a real-life purpose.

Curriculum Overview:

At Fulwood and Cadley, all teaching will follow the design, make, and evaluate cycle. Each stage will be rooted in technical knowledge and vocabulary. The design process will be based in real life, relevant contexts to give meaning to learning. While making, children will be given a range of tools to choose from and when evaluating children should be able to evaluate their products against a design criterion. DT will be taught at least once a term in each class.

See below for overview and then objectives:

Design and Technology Whole School Curriculum Map (including ideas for structures and mechanisms)

Class Year Group	Autumn Term	Spring Term	Summer Term
Class 1 Year R	<p>ELG: <u>Creating with Materials</u> Children at the expected level of development will: - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; - Share their creations, explaining the process they have used; - Make use of props and materials when role playing characters in narratives and stories.</p>	<p>A variety of activities are covered each term incl: Focusing on core skills which include cutting, sticking, correct pencil grip, use of a variety of equipment eg glue sticks, glue spreaders, rulers, scissors, rulers, 3D media, junk modelling and structures</p>	
Class 2 Year R/1	<p>Structures Free standing Structures Explore how they can be made stronger, stiffer and more stable Design and make a piece of playground equipment</p>	<p>Mechanisms Sliders and Levers Design and make a page for a story book with a moving part</p>	<p>Food Technology Preparing Fruit and Vegetables <u>Link with Geography topic – Country Focus</u> <u>Eg – fruit smoothie, salad, kebabs</u></p>
Class 3 Year 1	<p>Structures Free standing Structures Explore how they can be made stronger, stiffer and more stable Design and make a piece of playground equipment</p>	<p>Mechanisms Sliders and Levers Design and make a page for a story book with a moving part</p>	<p>Food Technology Preparing Fruit and Vegetables <u>Link with Geography topic – Country Focus</u> <u>Eg – fruit smoothie, salad, kebabs</u></p>
Class 4 Year 2	<p>Mechanisms Wheels and Axels Design and make a tricycle for a Gruffalo to travel in</p>	<p>Textiles Templates and Joining Techniques Running stitch and cross stitch</p>	<p>SATs</p>

Class 5 Years 2 & 3	Mechanisms Wheels and Axels Design and make a car for Elizabeth II to travel in	Textiles Templates and Joining Techniques Running stitch and cross stitch	SATs
Class 6 Year 3	Mechanical Systems Levers and Linkages Design and make a moving toy or story page – link Roald Dahl	Food Technology Healthy and Varied Diet <u>Link with Geography topic – Country Focus</u> <u>Eg – Pizza or Pasta</u>	Structures Shell Structures Apply their understanding of how to strengthen, stiffen and reinforce more complex structures Design and make packaging for a different shaped pizza
Class 7 Year 4	Electrical Systems - simple switches and circuits (including programming, monitoring and control) Design and make a torch for use when camping	Food Technology Healthy and Varied Diet <u>Link with Geography topic – Country Focus</u> <u>Eg – African Cuisine</u>	Textiles 2-D shape to 3-D products Running stitch, cross stitch and over stitch Understand seam allowance Sew on buttons and make loops
Class 8 Year 4 & 5	Electrical Systems More complex circuits and switches (including programming and control) Design and make a burglar alarm (pressure sensor)	Textiles 2-D shape to 3-D products Running stitch, cross stitch and over stitch Understand seam allowance Sew on buttons and make loops	Food Technology Celebrating Culture and Seasonality <u>Link with Geography topic – Country Focus</u> <u>Eg – Greek Cuisine</u>
Class 9 Year 5	Food Technology Celebrating Culture and Seasonality <u>Link with Geography topic – Country Focus</u> <u>Eg – Mexican/ Aztecs</u>	Mechanical Structures Cams, Pulleys and Gears Design and make a moving toy using gears	Textiles Combing different fabric shapes (including computer aided design) – eg design a T-shirt to promote favourite sport – iron on logo, transfer materials, press stud machine

<p>Class 10 Year 6</p>	<p>Structures and construction</p> <p>Design and make a shelter for use in a nursery play area or music event</p>	<p>Electrical Systems</p> <p>- more complex switches and circuits (including programming, monitoring and control) – includes electrical and mechanical components</p> <p>Design and make a ride for a fairground</p>	<p>SATs</p>
<p>Class 11 Year 6</p>	<p>Structures and construction</p> <p>Design and make a shelter for use in a nursery play area or music event</p>	<p>Electrical Systems</p> <p>- more complex switches and circuits (including programming, monitoring and control) – includes electrical and mechanical components</p> <p>Design and make a ride for a fairground</p>	<p>SATs</p>

Early Learning Goals for EYFS

Physical Development

Physical activity is vital in children’s all-round development, enabling them to pursue happy, healthy and active lives⁷. Gross and fine motor experiences develop incrementally throughout early childhood, starting with sensory explorations and the development of a child’s strength, co-ordination and positional awareness through tummy time, crawling and play movement with both objects and adults. By creating games and providing opportunities for play both indoors and outdoors, adults can support children to develop their core strength, stability, balance, spatial awareness, co-ordination and agility. Gross motor skills provide the foundation for developing healthy bodies and social and emotional well-being. Fine motor control and precision helps with hand-eye co-ordination, which is later linked to early literacy. Repeated and varied opportunities to explore and play with small world activities, puzzles, arts and crafts and the practice of using small tools, with feedback and support from adults, allow children to develop proficiency, control and confidence.

Understanding the World

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children’s personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children’s vocabulary will support later reading comprehension.

Expressive Arts and Design

The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe.

Lancashire Assessment in Design and Technology End of Year Expectations

	Design	Make	Evaluate	Technical Knowledge (Select as appropriate)	Cooking and Nutrition
Year 1	<ul style="list-style-type: none"> ✓ Use pictures and words to convey what they want to design/ make. ✓ Explore ideas by re-arranging materials ✓ Select pictures to help develop ideas ✓ Use 'mock-ups' e.g. recycled material trial models to try out their ideas. 	<ul style="list-style-type: none"> ✓ Select materials from a limited range ✓ Explain what they are making ✓ Name the tools they are using 	<ul style="list-style-type: none"> ✓ Explore existing products and investigate how these have been made (including teacher-made examples) ✓ Talk about their design as they develop and identify good and bad points ✓ Say what they like and do not like about items they have made and attempt to say why. 	<ul style="list-style-type: none"> ✓ Start to use technical vocabulary. ✓ Cut out shapes which have been created by drawing round a template. ✓ Join materials in a variety of ways. ✓ Decorate using a variety of techniques. ✓ Know some ways of making structures stronger. 	<ul style="list-style-type: none"> ✓ Group familiar food products e.g. fruit and vegetables. ✓ Cut and chop a range of ingredients. ✓ Work safely and hygienically. ✓ Know about the need for a variety of foods in a diet.
Year 2	<ul style="list-style-type: none"> ✓ Propose more than one idea for their product. ✓ Use ICT to communicate ideas. ✓ Use drawings to record ideas as they are developed. ✓ Add notes to drawings to help explanations. 	<ul style="list-style-type: none"> ✓ Discuss their work as it progresses. ✓ Select and name the tools needed to work the materials. ✓ Explain which materials they are using and why. 	<ul style="list-style-type: none"> ✓ Decide how existing products do / do not achieve their purpose. ✓ Discuss how closely their finished product meets their own design criteria. 	<ul style="list-style-type: none"> ✓ Show how to stiffen some materials. ✓ Know how to make a simple structure more stable. ✓ Attach wheels to a chassis using an axle. ✓ Know some different ways of making things move in a 2-D plane. 	<ul style="list-style-type: none"> ✓ Cut, peel, grate, chop a range of ingredients. ✓ Work safely and hygienically. ✓ Know about the <i>Eatwell Plate</i>. ✓ Understand where food comes from.

<p>Year 3</p>	<ul style="list-style-type: none"> ✓ Develop more than one design or adaptation of an initial design. ✓ Plan a sequence of actions to make a product. ✓ Think ahead about the order of their work and decide upon tools and materials. ✓ Propose realistic suggestions as to how they can achieve their design ideas. 	<ul style="list-style-type: none"> ✓ Select from a range of tools for cutting, shaping, joining and finishing. ✓ Use tools with accuracy. ✓ Select from materials according to their functional properties. ✓ Use appropriate finishing techniques. 	<ul style="list-style-type: none"> ✓ Investigate similar products to the one to be made to give starting points for a design. ✓ Research needs of 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 user's design criteria. ✓ Investigate key events and individuals in design and technology. 	<ul style="list-style-type: none"> ✓ Use an increasingly appropriate technical vocabulary for tools materials and their properties. ✓ Understand seam allowance. ✓ Prototype a product. ✓ Sew on buttons and make loops. ✓ Strengthen frames with diagonal struts. ✓ Measure and mark square section, strip and dowel accurately to 1cm. ✓ Incorporate a circuit into a model. 	<ul style="list-style-type: none"> ✓ Follow instructions / recipes. ✓ Join and combine a range of ingredients. ✓ Begin to understand the food groups on the <i>Eatwell Plate</i>.
<p>Year 4</p>	<ul style="list-style-type: none"> ✓ Record the plan by drawing using annotated sketches. ✓ Use prototypes to develop and share ideas. ✓ Consider aesthetic qualities of materials chosen. ✓ Use CAD where appropriate. 	<ul style="list-style-type: none"> ✓ Prepare pattern pieces as templates for their design. ✓ Select from techniques for different parts of the process. 	<ul style="list-style-type: none"> ✓ Draw / sketch existing products in order to analyse and understand how products are made. ✓ Identify the strengths and weaknesses of their design ideas in relation to purpose / user. ✓ Consider and explain how the finished product could be improved. ✓ Investigate key events and individuals in design and technology. 	<ul style="list-style-type: none"> ✓ Use electrical systems such as switches bulbs and buzzers. ✓ Use ICT to control products. ✓ Use linkages to make movement larger or more varied. 	<ul style="list-style-type: none"> ✓ Make healthy eating choices -use the <i>Eatwell plate</i>. ✓ Understand seasonality. ✓ Know where and how ingredients are reared and caught. ✓ Prepare and cook using different cooking techniques.
<p>Year 5</p>	<ul style="list-style-type: none"> ✓ Record ideas using annotated diagrams. ✓ Use models, kits and drawings to help formulate design ideas. ✓ Sketch and model alternative ideas. ✓ Decide which design idea to develop. 	<ul style="list-style-type: none"> ✓ Develop one idea in depth. ✓ 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. 	<ul style="list-style-type: none"> ✓ Research and evaluate existing products. ✓ Consider user and purpose. ✓ Consider and explain how the finished product could be improved related to design criteria. ✓ Investigate key events and individuals in design and technology. 	<ul style="list-style-type: none"> ✓ Use the correct vocabulary appropriate to the project. ✓ Join materials using appropriate methods. ✓ Create 3 --D textile products using pattern pieces. ✓ Understand pattern layout with textiles. 	<ul style="list-style-type: none"> ✓ Join and combine a widening range of ingredients. ✓ Select and prepare foods for a particular purpose. ✓ Know where and how ingredients are grown and processed.
<p>Year 6</p>	<ul style="list-style-type: none"> ✓ Plan the sequence of work. ✓ Devise step by step plans which can be read / followed by someone else. ✓ Use exploded diagrams and cross-sectional diagrams to communicate ideas. 	<ul style="list-style-type: none"> ✓ Make prototypes. ✓ Use research information to inform decisions. ✓ Produce detailed lists of ingredients / components / materials and tools. ✓ Refine their product – review and rework / improve. 	<ul style="list-style-type: none"> ✓ Identify the strengths and weaknesses of their design ideas. ✓ Report using correct technical vocabulary. ✓ Discuss how well the finished product meets the design criteria having tested on/discussed outcomes with the user. ✓ Understand how key people have influenced design in a variety of contexts. 	<ul style="list-style-type: none"> ✓ Cut strip wood, dowel, square section wood accurately to 1mm. ✓ Build frameworks to support mechanisms. ✓ Stiffen and reinforce complex structures. ✓ Use mechanical systems such as cams, pulleys and gears. ✓ Use electrical systems such as motors and switches. 	<ul style="list-style-type: none"> ✓ Understand and apply the principles of a healthy and varied diet. ✓ Choose ingredients to support healthy eating choices when designing their food products. ✓ Prepare and cook a variety of mostly savoury dishes using a range of cooking techniques.

			✓ Investigate key events and individuals in design and technology.	✓ Program, monitor and control using ICT.	
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