

Eccleston Primary School

DT Curriculum



Whole school definition: **DT** – makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

DT Curriculum Overview

National Curriculum DT - 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 DT aims to ensure that all pupils:

- to be able to create a product for a person, for a purpose and create high quality products
- 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.

EYFS – see Development Matters 2021 for detailed examples of how to support learning in EYFS

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.

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Intent

At Eccleston Primary School, Design Technology is an inspiring, rigorous and practical subject. We want our pupils to understand the benefits of imagination, taking risks and collaboration. Children are encouraged to solve real life and relevant problems within a variety of contexts. We aim to give children skills for life which can help them with future studies. We want our pupils to instil qualities such as curiosity, enquiry and determination. Pupils are inspired, engaged and excited through carrying out a range of effective research and design tasks prior to production of products. Students thrive in learning how to work both independently and collaboratively to gain an in-depth understanding of the creative and problem-solving process. After creating a tangible product, this fills the pupils with the sense of achievement, pride, and boosts self-esteem.

Implementation

At Eccleston Primary School, Design Technology is taught each term discretely and where links can be made, will fit thematically with other foundation subjects. Our curriculum offers a range of exciting units that solve real and relevant problems. Through these units, the curriculum is taught through concepts that underpin the subject. There are four concepts in the Design Technology curriculum: **Technical Knowledge, Practical Knowledge, Design Inspiration** and **Design Process**. These four concepts are taught alongside **Vocabulary** which connects all concepts and knowledge, strengthening our Design Technology curriculum.

Technical Knowledge:

Technical knowledge involves knowing about the technical theories that underpin design. This helps designers to imagine products that, in the real world, will do what they intended them to do. For example, knowing about the theory of triangulation allows designers to create structures that are strong and stable; knowing about the theory of electrical systems allows them to produce workable products. Technical knowledge also includes learning about design challenges, such as how best to join materials. Without knowing, for example, that scoring card before folding makes for a cleaner fold, one cannot fully realise one's designs. Technical knowledge is distinct from practical knowledge in that it is focused on theory; practical knowledge is based on one's ability to apply theory successfully.

Practical Knowledge:

Practical knowledge involves applying technical knowledge to projects. It requires practice and a degree of what this book calls 'finger fluency': in much the same way as a fluent reader requires automatic recall of phonic knowledge, designers need automatic recall of technical and practical knowledge to successfully realise their designs. Without practical competence, pupils will struggle to understand the limitations of their designs and, therefore, be more likely to produce unrealistic design proposals. For example, if pupils know, and are fluent in applying, how to cut and join square-section wood when forming a truss then their bridge designs will reflect this practical knowledge.

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Design Inspiration:

Design and technology is primarily concerned with making useful inventions that have a purpose and intended users (as opposed to art which is primarily a form of expression through media).

Design Process:

Design is an iterative process. The word 'iterate' means to repeat ('re-iterate' means to repeat what has been repeated). This is an important part of the discipline of design. This Curriculum Companion for DT aims to model to pupils the design process through guided designs which use the following iterative process: think, make, break, repeat.



The teaching of DT follows a cycle of research, developing own ideas through design, mastering skills, making final products, and evaluating. As the children move through school, they revisit concepts with increasing levels of depth.

'Design Technology is the combination of Art and Science; it is as much a matter of finding problems as it is solving them'. Byran Lawson.

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	0 – 3 years		3 – 4 years		Reception	
	Expressive arts and design – Development Matters		Expressive arts and design – Development Matters		Expressive arts and design – Development Matters	
	<ul style="list-style-type: none"> Explore different materials, using all their senses to investigate them. Manipulate and play with different materials. Use their imagination as they consider what they can do with different materials. Make simple models which express their ideas. 		<ul style="list-style-type: none"> Explore different materials freely, to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures 		<ul style="list-style-type: none"> Autumn - Joining materials Spring – Model Building Summer – Making things move Development Matters: Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources, and skills. 	
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn Term 2	<p style="text-align: center;">Slider Mechanisms</p> <p>Concepts: Technical Knowledge Design Inspiration Design Process</p> <p>National Curriculum: <u>Design</u> - design purposeful, functional, appealing products for themselves and other users based on design criteria - generate, develop, model and communicate</p>	<p style="text-align: center;">Lever Mechanisms</p> <p>Concepts: Technical Knowledge Practical Knowledge Design Inspiration Design Process</p> <p>National Curriculum: <u>Design</u> - design purposeful, functional, appealing products for themselves and other users based on design criteria - generate, develop, model and communicate their ideas through talking, drawing,</p>	<p style="text-align: center;">Linked Levers</p> <p>Concepts: Technical Knowledge Practical Knowledge Design Process</p> <p>National Curriculum: <u>Design</u> - 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</p>	<p style="text-align: center;">Shell Structures</p> <p>Concepts: Technical Knowledge Practical Knowledge Design Inspiration Design Process</p> <p>National Curriculum: <u>Design</u> - 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</p>	<p style="text-align: center;">Food Throughout the Year & Bread</p> <p>Concepts: Technical Knowledge Practical Knowledge Design Process</p> <p>National Curriculum: <u>Design</u> -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</p>	<p style="text-align: center;">Pulleys and Gears</p> <p>Concepts: Technical Knowledge Design Inspiration Design Process</p> <p>National Curriculum: <u>Design</u> -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</p>

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	<p>their ideas through talking, drawing, templates, mock-ups and where appropriate, ICT</p> <p>Make</p> <ul style="list-style-type: none"> - select from and use a range of tools and equipment to perform practical tasks (cutting, shaping and joining) - select from and use a wide range of materials and components, including construction materials, according to their characteristics <p>Evaluate</p> <ul style="list-style-type: none"> - evaluate their ideas and products against design criteria <p>Technical knowledge</p> <ul style="list-style-type: none"> - explore and use mechanisms in their products. 	<p>Templates and mock-ups</p> <p>Make</p> <ul style="list-style-type: none"> - select from and use a range of tools and equipment to perform practical tasks (cutting, shaping, joining and finishing) - select from and use a wide range of materials and components, including materials <p>Evaluate</p> <ul style="list-style-type: none"> - evaluate their ideas and products against design criteria <p>Technical knowledge</p> <ul style="list-style-type: none"> - explore and use mechanisms (levers), in their products. 	<p>through discussion, annotated</p> <p>Sketches and prototypes</p> <p>Make</p> <ul style="list-style-type: none"> - select from and use a wider range of tools and equipment to perform practical tasks (cutting and joining) accurately - select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities <p>Evaluate</p> <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 <p>Technical knowledge</p> <ul style="list-style-type: none"> - understand and use mechanical systems in their products (levers) 	<ul style="list-style-type: none"> - generate, develop, model and communicate their ideas through discussion and prototypes <p>Make</p> <ul style="list-style-type: none"> - select from and use a wider range of tools and equipment to perform practical tasks (cutting, shaping, joining and finishing) accurately - select from and use a wider range of materials and components, including construction materials according to their functional properties and aesthetic qualities <p>Evaluate</p> <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 <p>Technical knowledge</p> <ul style="list-style-type: none"> - apply their understanding of how to strengthen, stiffen and reinforce more complex structures 	<ul style="list-style-type: none"> - generate, develop, model and communicate their ideas through discussion <p>Make</p> <ul style="list-style-type: none"> -select from and use a wider range of materials and components, including ingredients, according to their functional properties and aesthetic qualities <p>Cooking and Nutrition</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. 	<p>through discussion, annotated sketches, prototypes and computer-aided design</p> <p>Make</p> <ul style="list-style-type: none"> -select from and use a wider range of tools and equipment to perform practical tasks (cutting, shaping, joining and finishing) accurately -select from and use a wider range of materials and components, according to their functional properties and aesthetic qualities <p>Evaluate</p> <ul style="list-style-type: none"> -evaluate their ideas and products against their own design criteria and consider the views of others to improve their work <p>Technical knowledge</p> <ul style="list-style-type: none"> - understand and use mechanical systems in their products (gears & pulleys) - understand and use electrical systems in their products (motors)
<p>Spring Term 2</p>	<p>Solid Structure</p> <p>Concepts: Technical Knowledge Design Inspiration Design Process</p> <p>National Curriculum: <u>Design</u> - design purposeful, functional, appealing</p>	<p>Frame Structures</p> <p>Concepts: Technical Knowledge Practical Knowledge Design Inspiration Design Process</p> <p>National Curriculum: <u>Design</u> - design purposeful, functional, appealing products for</p>	<p>Vegetable Soup</p> <p>Concepts: Design Inspiration Practical Knowledge Design Process</p> <p>National Curriculum: <u>Design</u> -use research and develop design criteria to inform the</p>	<p>Arch Structures (CG3)</p> <p>Concepts: Design Inspiration Practical Knowledge Design Inspiration Design Process</p> <p>National Curriculum: <u>Design</u> - use research and develop design criteria to inform the</p>	<p>CAMs</p> <p>Concepts: Technical Knowledge Design Inspiration Design Process</p> <p>National Curriculum: <u>Design</u> - use research and develop design criteria to inform the</p>	<p>Electric Motors</p> <p>Concepts: Technical Knowledge Design Inspiration Design Process</p> <p>National Curriculum: <u>Design</u> - use research and develop design criteria to inform the design of innovative,</p>

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	<p>products for themselves and other users based on design criteria</p> <ul style="list-style-type: none"> - generate, develop, model and communicate their ideas through talking, drawing and templates <p>Make</p> <ul style="list-style-type: none"> - select from and use a range of tools and equipment to perform practical tasks (cutting, shaping, joining) - select from and use a wide range of materials and components, including construction materials, according to their characteristics <p>Evaluate</p> <ul style="list-style-type: none"> - explore and evaluate a range of existing products - evaluate their ideas and products against design criteria <p>Technical knowledge</p> <ul style="list-style-type: none"> - build structures, exploring how they can be made stronger, stiffer and more stable 	<p>themselves and other users based on design criteria</p> <ul style="list-style-type: none"> - generate, develop, model and communicate their ideas through talking, drawing, templates and mock-ups <p>Make</p> <ul style="list-style-type: none"> - select from and use a range of tools and equipment to perform practical tasks (cutting with scissors, joining with glue) - select from and use a wide range of materials and components, including construction materials and textiles according to their characteristics <p>Evaluate</p> <ul style="list-style-type: none"> - explore and evaluate a range of existing products - evaluate their ideas and products against design criteria <p>Technical knowledge</p> <ul style="list-style-type: none"> - build structures, exploring how they can be made stronger, stiffer and more stable 	<p>design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</p> <ul style="list-style-type: none"> - generate, develop, model and communicate their ideas through discussion <p>Make</p> <ul style="list-style-type: none"> -select from and use a wider range of materials and components, including ingredients, according to their functional properties and aesthetic qualities <p>Cooking and Nutrition</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. 	<p>design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</p> <ul style="list-style-type: none"> - generate, develop, model and communicate their ideas through discussion, annotated sketches, prototypes and computer-aided design <p>Make</p> <ul style="list-style-type: none"> - select from and use a wider range of tools and equipment to perform practical tasks (cutting, shaping, joining and finishing), accurately - select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities <p>Evaluate</p> <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 <p>Technical knowledge</p> <ul style="list-style-type: none"> - apply their understanding of how to strengthen, stiffen and reinforce more complex structures 	<p>design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</p> <ul style="list-style-type: none"> - generate, develop, model and communicate their ideas through discussion, annotated sketches and cross-sectional <p>Make</p> <ul style="list-style-type: none"> - select from and use a wider range of tools and equipment to perform practical tasks (cutting, shaping, joining and finishing) accurately - select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities <p>Evaluate</p> <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 <p>Technical knowledge</p> <ul style="list-style-type: none"> - understand and use mechanical systems in their products (cams) 	<p>functional, appealing products that are fit for purpose, aimed at particular individuals or groups</p> <ul style="list-style-type: none"> - generate, develop, model and communicate their ideas through discussion, annotated sketches and prototypes <p>Make</p> <ul style="list-style-type: none"> - select from and use a wider range of tools and equipment to perform practical tasks (cutting, joining and finishing), accurately - select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities <p>Evaluate</p> <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 <p>Technical knowledge</p> <ul style="list-style-type: none"> - understand and use electrical systems in their products (incorporating switches and motors)
Summer Term 2	Portable Snacks	Wheels and Axles	Frame Structures	Paper Circuits	Frame Structures	Bolognese
	<p>Concepts:</p> <p>Design Inspiration Practical Knowledge Design Process</p>	<p>Concepts:</p> <p>Design Inspiration Practical Knowledge Design Inspiration</p>	<p>Concepts:</p> <p>Technical Knowledge Practical Knowledge Design Inspiration</p>	<p>Concepts:</p> <p>Technical Knowledge Design Inspiration Design Process</p>	<p>Concepts:</p> <p>Technical Knowledge Design Inspiration Design Process</p>	<p>Concepts:</p> <p>Design Inspiration Practical Knowledge Design Process</p>

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	<p>National Curriculum: Cooking and Nutrition -use the basic principles of a healthy and varied diet to prepare dishes - understand where food comes from.</p>	<p style="color: red;">Design Process</p> <p>National Curriculum: <u>Design</u> - design purposeful, functional, appealing products for themselves and other users based on design criteria - generate, develop, model and communicate their ideas through talking and drawing <u>Make</u> - select from and use a range of tools and equipment to perform practical tasks (cutting and joining) - select from and use a wide range of materials and components, including construction materials according to their characteristics <u>Evaluate</u> - explore and evaluate a range of existing products - evaluate their ideas and products against design criteria <u>Technical knowledge</u> - explore and use mechanisms (wheels and axles), in their products.</p>	<p style="color: red;">Design Process</p> <p>National Curriculum: <u>Design</u> -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 and prototypes. <u>Make</u> -select from and use a wider range of tools and equipment to perform practical tasks (cutting, joining – jinks and struts) accurately - select from and use a wider range of materials and components, including construction materials according to their functional properties and aesthetic qualities <u>Evaluate</u> -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 <u>Technical knowledge</u> -apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p>	<p>National Curriculum: <u>Design</u> -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, and annotated sketches <u>Make</u> -select from and use a wider range of tools and equipment to perform practical tasks (cutting – scissors, joining – glue and copper tape) accurately - select from and use a wider range of materials and components, including construction Materials according to their functional properties and aesthetic qualities <u>Evaluate</u> - 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 <u>Technical knowledge</u> -understand and use electrical systems in their products (for example, series circuits incorporating switches and bulbs)</p>	<p>National Curriculum: <u>Design</u> - 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 and prototypes <u>Make</u> -select from and use a wider range of tools and equipment to perform practical tasks (cutting and joining) accurately - select from and use a wider range of materials and components, including construction materials and textiles, according to their functional properties and aesthetic qualities <u>Evaluate</u> -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 <u>Technical knowledge</u> - apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p>	<p>National Curriculum: <u>Design</u> -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 <u>Make</u> -select from and use a wider range of materials and components, including ingredients, according to their functional properties and aesthetic qualities <u>Cooking and Nutrition</u> - 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</p>
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