

Design and Technology

At Ellistown we recognise that designing, making and evaluating are significant life skills which are of central importance to a child's learning and development.

Our aim at Ellistown is to:




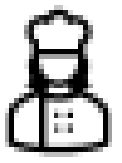
- Explore by immersing children in DIY projects
- Inspire by ensuring our learners are excited by creating innovative projects
- Spark by igniting creative ideas so that we become chefs, engineers and designers
- Deepen by developing children's understanding of how things work in the ever-changing world we live in.



A design technologist leaving Ellistown will leave with a passion for developing their ideas into innovative projects using their creative, technical and practical expertise. They will have deep knowledge and understanding of a range of textiles, mechanisms, materials, electrical and mechanical components as well as food technology, which will provide the foundation to design, create and evaluate products to solve real and relevant problems within a variety of contexts. They will make wider curriculum links with art, computing and engineering through being confident and articulate in their learning. Children will have many opportunities to develop real life skills, subject knowledge and an enriched vocabulary..

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception	<u>Who lives where?</u> Puppets, masks	<u>What makes a hero?</u> Textures and materials	<u>Once upon a time...</u> Joining techniques - bridges	<u>Let's go outside!</u> Where does food come from?	<u>All creatures great and small</u> Design junk models	<u>Ticket to ride!</u> Design & make transport - form & function
	Block 1/2		Block 3/4		Block 5/6	
Year 1	Cooking and Nutrition - Pumpkin Soup		Structures (freestanding) -Building Things		Mechanisms (Levers and Sliders) - Moving Pictures	
Year 2			Mechanisms (wheels & axels)-Building Moon Buggies Cooking and Nutrition - smoothies		Textiles (templates & joining techniques) -Sea creatures	
Year 3	Structures (shell structures inc. CAD)				Textiles (2D shape to 3D product) - bags Cooking and Nutrition - Healthy eating	
Year 4	Electrical Systems (simple circuits & switches) - Design and program a toy Textiles-sewing – Roman coin purses		Cooking and Nutrition - Anglo-Saxon Food		Mechanical systems (levers & linkages)	
Year 5	Frame Structures - Shanty Towns		Electrical Systems (more complex circuits & switches) - Science		Cooking and Nutrition- Pasta Salad and Flatbreads	
Year 6	Mechanical Systems (pulleys or gears)		Cooking and Nutrition - sustainable		Textiles (combining different fabric shapes, inc. CAD) - Make do and Mend	

Coverage of the National Curriculum for Design and Technology

	EYFS	KS1	KS2
Design 		Pupils should be taught to: <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. 	Pupils should be taught to: <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; - generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
Make 	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Use a range of small tools, including scissors, paintbrushes and cutlery.	Pupils should be taught to: <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. 	Pupils should be taught to: <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 	Share their creations, explaining the process they have used.	Pupils should be taught to: <ul style="list-style-type: none"> - explore and evaluate a range of existing products; - evaluate their ideas and products against design criteria. 	Pupils should be taught to: <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.
Technical Knowledge 		Pupils should be taught to: <ul style="list-style-type: none"> - 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. 	Pupils should be taught to: <ul style="list-style-type: none"> - 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 		Pupils should be taught to: <ul style="list-style-type: none"> - use the basic principles of a healthy and varied diet to prepare dishes; - understand where food comes from. 	Pupils should be taught to: <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.

Ellistown Design and Technology (DT) Knowledge and Skills Progression

	R	1	2
Design 	<p>Work together to develop and realise creative ideas.</p> <p>Begin to think about form and function when designing.</p>	<p>Design a functional product with a purpose for themselves and others.</p> <p>Design a product to do a specific job.</p> <p>Draw and label pictures of their design ideas.</p> <p>Discuss their ideas and explain their choices.</p>	<p>Design an appealing and functional product with a purpose for themselves and others.</p> <p>Use a set of criteria to aid the design process.</p> <p>Draw, and make notes on, their design ideas.</p> <p>Explain what they are making, and what they will need to use.</p>
Make 	<p>Develop fine motor skills so that they can use a range of tools competently, safely and confidently, through threading, cutting, weaving, playdough.</p> <p>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</p> <p>Create collaboratively, sharing ideas, resources and skills.</p> <p>Choose appropriate tools and materials to use.</p> <p>Explore different ways of joining materials, e.g. adhesive tape and glue.</p>	<p>Name the tools they are using and know how to use them safely.</p> <p>Use given tools to cut, shape, join and finish products.</p> <p>Explore different materials and components to find appropriate ways of joining materials.</p>	<p>Select and name appropriate tools and equipment needed from a given range.</p> <p>Know which equipment is used for cutting, shaping joining and finishing.</p> <p>Select from a wide range of materials and components, depending on use.</p>
Evaluate 	<p>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</p> <p>Share creations with peers and begin to explain the processes they used.</p>	<p>Explore, investigate and use existing products.</p> <p>Say whether or not their product does the job it is supposed to.</p> <p>Explain why their product is good.</p>	<p>Explore and evaluate existing products.</p> <p>Say why a product is good (or not) and what job it does (and if it good / bad at this job).</p> <p>Evaluate their product against their design criteria.</p>
Technical Knowledge 	<p><u>Structures</u> Begin to use different methods of joining materials, with support and guidance. Begin to think about the characteristics of materials when building different types of structure.</p> <p><u>Cooking and Nutrition</u> Begin to understand some food preparation tools, techniques and processes Practise stirring, mixing, pouring, blending Discuss how to make an activity safe and hygienic *Discuss use of senses Understand need for variety in food Begin to understand that eating well contributes to good health</p>	<p><u>Mechanisms</u> Begin to use levers or slides</p> <p><u>Structures</u> Begin to measure and join materials, with some support Describe some different characteristics in materials Join materials in different ways Use joining, rolling or folding to make it stronger Use own ideas to try to make product stronger</p> <p><u>Cooking and Nutrition</u> Describe textures Wash hands & clean surfaces Think of interesting ways to decorate food Say where some foods come from, (i.e. plant or animal) Describe differences between some food groups (i.e. sweet, vegetable etc.) Discuss how fruit and vegetables are healthy Cut, peel and grate safely, with support</p>	<p><u>Mechanisms</u> Use levers or slides Begin to understand how to use wheels and axles Select appropriate tools / techniques Alter product after checking, to make it better</p> <p><u>Textiles</u> Measure textiles Join textiles together to make a product, and explain how I did it Carefully cut textiles to produce accurate pieces Explain choices of textile Understand that a 3D textile structure can be made from two identical fabric shapes.</p> <p><u>Cooking and Nutrition</u> Explain hygiene and keep a hygienic kitchen Describe properties of ingredients and importance of varied diet Say where food comes from (animal, underground etc.) Describe how food is farmed, home-grown, caught Draw eat well plate; explain there are groups of food Describe “five a day” Cut, peel and grate with increasing confidence</p>

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Design



Design an appealing and functional product with a clear purpose and use for themselves and others. Sketch and label diagrams of their design ideas. Discuss their ideas and explain the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use.

Design an appealing and functional product for a particular audience. Create design criteria for a product. Use sketches, labelled diagrams and notes to explain their design. Explain their ideas, the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use, using the design criteria.

Research existing products and develop design criteria. Design functional, appealing products aimed at particular individuals or groups. Create detailed design criteria for a product. Communicate ideas by developing sketches, labelled diagrams and notes to support their design. Communicate ideas through discussion, presentation and peer critique. Adapt designs, if needed, after design discussion.,

Research existing products to inform design choices and criteria, taking into consideration user needs. Design innovative, functional, appealing products aimed at particular individuals or groups. Develop a set of criteria, based on research, to aid design process. Communicate ideas by using cross-sectional diagrams, exploded diagrams, prototypes, pattern ideas and computer-aided design. Communicate ideas through oral and ICT presentations. Adapt designs, where necessary, based of design feedback.

Make



Select and name appropriate tools and equipment needed from a suggested range. Know and choose which equipment is used for cutting, shaping joining and finishing from a suggested range. Know some characteristics of materials and components and select from a wide range of these, depending on use.

Select and name appropriate tools and equipment needed. Know and choose which equipment is used for cutting, shaping joining and finishing. Know the characteristics of materials and components and select, depending on use.

Select, name and use appropriate tools and equipment safely and accurately. Use some specialist equipment accurately and safely. Select from and use a range of specific materials and components according to their specific use and appearance

Select from and use a wider range of specialist tools and equipment. Use specialist equipment for a specific purpose accurately and safely. Select from and use a wider range of specific materials and components according to their use and aesthetic properties.

Evaluate



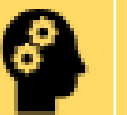
Explore and analyse existing products. Consider why products are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work. Consider how some products have helped the world.

Explore and analyse existing products against a set of criteria. Consider how products were made, why they are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work based on how effective the product is. Consider how some people and products have helped the world.

Investigate, explore and analyse a range of existing products based on a set of criteria. Evaluate their ideas, prototypes and products against a specific set of criteria. Suggest ways of improving their own and others' work, using their criteria. Consider how some people and products have changed the world.

Investigate and explore a range of existing products, considering construction and purpose. Evaluate their ideas, prototypes and products against a specific set of criteria they have devised. Suggest ways of improving own and others' work, using specific criteria. Identify and understand how key events and individuals in design and technology have helped shape the world.

Technical Knowledge



Structures

Use appropriate materials
Work accurately to make cuts and holes join materials
Begin to make strong structures

Textiles

Join different textiles in different ways
Choose textiles considering appearance and functionality
Begin to understand that a simple fabric shape can be used to make a 3D textiles project

Cooking and Nutrition

Carefully select ingredients
Use equipment safely
Make product look attractive
Think about how to grow plants to use in cooking
Begin to understand food comes from UK and wider world
Describe how healthy diet = variety/balance of food/drinks
Explain how food and drink are needed for active/healthy bodies.
Prepare and cook some dishes safely and hygienically
Grow in confidence using some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking

Mechanical Systems

Select most appropriate tools / techniques
Explain alterations to product after checking it
Grow in confidence about trying new / different ideas.
Use levers and linkages to create movement
Use pneumatics to create movement

Electrical Systems

Use simple circuit in product
Use number of components in circuit
Program a computer to control product

Cooking and Nutrition

Explain how to be safe/hygienic
Think about presenting product in interesting/ attractive ways
Understand ingredients can be fresh, pre-cooked or processed
Begin to understand about food being grown, reared or caught in the UK or wider world
Describe eat well plate and how a healthy diet=variety / balance of food and drinks
Explain importance of food and drink for active, healthy bodies
Prepare and cook some dishes safely and hygienically
Use some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking

Structures

Select materials carefully, considering intended use of the product, the aesthetics and functionality.
Explain how product meets design criteria
measure accurately enough to ensure precision
Ensure product is strong and fit for purpose
Reinforce and strengthen a 3D frame

Electrical Systems

Use different types of circuit in product
Think of ways in which adding a circuit would improve product
Program a computer to monitor changes in environment and control product
Incorporate switch into product

Cooking and Nutrition

Explain how to be safe / hygienic and follow own guidelines
Present product well - interesting, attractive, fit for purpose
Begin to understand seasonality of foods
Understand food can be grown, reared or caught in the UK and the wider world
Describe how recipes can be adapted to change appearance, taste, texture, aroma
Explain how there are different substances in food / drink needed for health
Prepare and cook some savoury dishes safely and hygienically including, where appropriate, use of heat source
Use range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.

Textiles

Think about user's wants/needs and aesthetics when choosing textiles
Make product attractive and strong
Use own template
Make a prototype
Use a range of joining techniques
Think about how product might be sold
Think carefully about what would improve product
Understand that a single 3D textiles project can be made from a combination of fabric shapes.

Mechanical Systems

Refine product after testing, considering aesthetics, functionality and purpose
Incorporate hydraulics and pneumatics
Be confident to try new / different ideas
Use cams, pulleys and gears to create movement

Cooking and Nutrition

Understand a recipe can be adapted by adding / substituting ingredients
Explain seasonality of foods
Learn about food processing methods
Name some types of food that are grown, reared or caught in the UK or wider world
Adapt recipes to change appearance, taste, texture or aroma.
Describe some of the different substances in food and drink, and how they can affect health
Prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of heat source.
Use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.