

Design Technology

At NELT we believe that Design and Technology prepares children to take part in the development of tomorrow's rapidly changing world. Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem-solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and eventually making products and systems.

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.*

The scheme of learning has a clear progression of substantive knowledge and vocabulary and links to other curriculum subjects. Our curriculum is planned around the following Design Technology concepts: structures, textiles, mechanisms, food.

Progression in disciplinary knowledge (concepts such as design, make, evaluate, technical knowledge, cooking and nutrition) is integrated within the curriculum and developed alongside the substantive knowledge which the children learn each year.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Structures	<i>What they are going to make before they make it.</i> <i>What a product is (by exploring the whole and its parts).</i> <i>Different techniques for joining materials, such as how to use adhesive tape and different sorts of glue.</i>	<i>Scissors will cut a variety of materials.</i> <i>Materials can be joined in different ways.</i> <i>A range of materials can be used to make a model.</i> <i>A home is a place where a person or animal live.</i> <i>A home needs to keep the person or animal warm, safe and dry.</i> <i>Simple 2D and 3D shapes.</i> <i>A design is a plan or drawing to help make a structure.</i>		<i>A roundhouse is a type of house with a circular plan and usually a conical roof.</i> <i>Roundhouses were built in the bronze and iron age.</i> <i>Wattle is a woven construction of twigs or branches used in building walls, fences, or roofs.</i> <i>Daub is covering something with a material such as mud or clay.</i> <i>A stable product means fixed, firm, or steady in position; not shaky or easily moved.</i>	<i>A container can be used to store something or transport it safely.</i> <i>The net of a 3D shape is what it looks like if it is opened out flat.</i> <i>A net can be folded up to make a 3D shape.</i> <i>The strength of the product can be improved by adding extra materials to improve its shape and reinforce thinner areas to help stop compression and bending forces damaging the item.</i>	<i>Kinetic energy is the energy an object has because of its movement.</i> <i>Wind turbine technology takes kinetic energy from the wind and converts it into electricity.</i> <i>The most common wind turbine has three blades, which are turned by the wind, on a tall tower.</i> <i>Wind turbines need to be sited in areas where there is plenty of wind with little blocking it, such as on the top of a hill.</i>	



		Evaluation is important and helps make necessary changes. What works and what needs improving.		A design criteria is the standard our product will be judged by. Adaptations to design can be made during or after the process.	Scoring is a process in which one cuts a groove into rigid material. This groove is used to either break the material along the slit, for decoration, or act as a guideline. Designers evaluate their finished products to test whether the product works well, meets the initial design aims and whether anything could be corrected or improved upon. Canopic jars were used in ancient Egyptian funerary practices to hold the organs of the deceased. These jars were typically made of stone or pottery. A tomb is a place in which you are buried when you die. The net of a 3D shape is what it looks like if it is opened out flat. A net can be folded up to make a 3D shape. The strength of the product can be improved by adding extra materials to improve its shape and reinforce thinner areas to help stop compression and bending forces damaging the item. Names and properties of 3D shapes.	Wind turbines can be used individually, for example to power one home. They can also be grouped together to form wind farms, which feed greater volumes of electricity into the electricity grid. Some wind farms are classed as onshore – they are on land. Others can be out at sea and are called offshore wind farms.	
Textiles	How to thread continuously (e.g., using lacing boards). How to thread a bobbin on a string. A textile is a kind of cloth. A textile can be joined by glue.		2 Fabric can be joined together by sewing. Thread a needle through the eye of the needle. Adding a knot at the end of the thread stops it coming apart.	Design criteria could be specific, measurable, achievable, relevant, and time-bound. A template is a pattern used as a guide for cutting or drawing. Templates are usually made of thin metal, wood, or plastic.			Cotton is seed-hair fibre of several species of plants of the genus <i>Gossypium</i>. Cotton is, one of the world's leading agricultural crops, is plentiful and economically produced,



			A running stitch is a simple straight stitch that weaves in and out of the fabric. Finishing off with a knot stops it coming apart. A money pouch / purse is made from material and used for carrying money safely. Pins can be used to secure fabric before sewing. A template is a pattern used as a guide for cutting or drawing. Evaluation is important and helps make necessary changes. Decoration is something used to make something else more beautiful.	The backstitch is a basic sewing method that creates a strong and continuous line. A back stitch is sewn backwards and then forwards, making stitches that overlap. The result is a solid and noticeable line of stitches. A running stitch is a simple straight stitch that weaves in and out of the fabric. Fasteners have a very functional role in a garment. They help the opening of fabrics to close exactly and correctly. Embellishments can be an easy way to add some visual texture and fun to a sewing project. Appliqué means sewing a piece of fabric (usually a shape) onto another piece of cloth. It adds patterns and shapes.			making cotton products relatively inexpensive. Cotton fibres can be made into a wide variety of fabrics. Simple sewing stitches such as running stitch, back stitch and whip stitch. A clothing manufacturer is someone who is skilled and well-equipped with all the tools and machinery for manufacturing clothes. Fashion designing is the art of creating clothing and accessories that reflect individual styles and trends. It blends creativity and technical expertise to make garments that express personality and cultural influences. Using a pattern, involves reading the directions carefully to understand the pattern shape and layout. Then cutting out the material carefully. Pin the cut pieces of fabric and join them by hand sewing. A seam is a term that refers to the stitching line where two fabrics are stitched together. A hem is the edge of a piece of cloth or clothing which has been turned under and sewn.
Mechanisms	The difference between a moving part and a non-moving part. How to select correct materials which allow for movement.	Wheels are a round frame that turns on the axle. Wheels are found on cars, trucks, bikes, wagons and help objects move.	A mechanism is the parts of an object that move together. Many different everyday objects use mechanisms			Solids, liquids and gases are called the three states of matter. Pneumatics looks at the use of compressed air to create a circuit.	An electrical system is a group of parts (components) that work together to carry electricity around a circuit.



	A wheel makes a vehicle move.	Fire engines are an emergency vehicle used when there is a fire or accident. Fire engines have changed over time, but all have wheels, a chassis and axles. Different methods to join materials together. Materials have different strengths and properties. Simple 3D shapes e.g. cube, cuboid, sphere, cylinder. Evaluation is an important part of making something.	from cars to pop-up books. An input is something that starts a system, for example: pushing a bicycle. An output is the result of the input, for example, bicycle wheels turning. A lever turns on a pivot. A linkage is a system of levers. A pivot is a central point from where something can turn. A design criteria is the standard our product will be judged by. Use drawings and labels to design a product.			A pneumatic circuit is made up of an input, process, and output. Pneumatics are used in everyday life for example compressed air is used for airbrushes, dentist drills, lorry breaks and bicycle pumps. Dart Frog - these frogs are considered one of Earth's most toxic, or poisonous, species. A syringe is the tube with a plunger that usually connects to a needle. In mechanics, compression is the application of balanced inward ("pushing") forces to different points on a material or structure, that is, forces with no net sum or torque directed so as to reduce its size in one or more directions. A pneumatic system is a connection of various components that converts the pressure energy of compressed air into mechanical work.	A battery contains stored electricity that can be used to power products. Series circuits only have one direction for the electricity to flow. A switch can be used to complete and break an electrical circuit, and if there is a break in a series circuit, all components will turn off. Form Over Function means prioritising how a product looks over its practical functionality/ability to do what it was designed for. As technology advances, toys increasingly incorporate technology elements. Toy design has an impact during play on child development. Successful toy designs strike a perfect balance between visual appeal and practical functionality. The difference between a side view, front view or top view of a design / product. The user is someone who will use the product. Using a net template to make a 3D shape. Evaluating a product for both form and function.
Food	Which foods they like to eat. How to wash hands before and after eating There are healthy and unhealthy foods. How to make some simple healthy food choices.	Food sources include plants and animals. The five senses are sight, hearing, smelling, tasting and touch. Chopping, grating and slicing is a way of cutting food.	Know that food comes from plant and animal sources. Scales are used to measure accurately. The human body needs a balanced diet to work properly.	A national dish is a culinary dish that is strongly associated with a particular country. Cuisine is a particular type of cooking, especially that of a particular region, or	Polar regions cover the top and bottom of planet Earth at the North and South Poles. Climate is a description of the average weather conditions in a certain place for a period of time.	A three course meal is a traditional dining experience consisting of appetizer, main course, and dessert. The meaning of bitter, sweet, sour, umami, salty, complement, flavour,	In 1940, the British government introduced food rationing. Rationing was designed to ensure fair shares for all at a time of national shortage.



How to use a knife and fork when supported by an adult. How to combine different ingredients to create a dish with adult support. The names of well-known fruit and vegetables. The use of simple kitchen utensils (e.g. spoon, knife, fork, grater, whisk)	Peeling is used to remove a part of the food we may not wish to eat. Words like appearance and texture help describe how food looks and feels. A salad is a mixture of cold vegetables such as lettuce, tomato, and cucumber, sometimes served with a dressing. Health and safety rules in the kitchen must be followed for safety. Use kitchen tools safely	Good health involves drinking enough water and eating the right amount of foods from the different food groups: - Carbohydrates give us energy. They are found in foods such as bread, potatoes and pasta. - Proteins help our bodies to repair themselves. They are found in foods such as fish, meat, beans, nuts, seeds, eggs and cheese. - Fats help store energy for our bodies. They are found in foods such as butter, cheese, nuts and fried food. - Fibre is important for helping us digest our foods. It's found in fruit and vegetables. - Dairy is a source of calcium good for bones and teeth. Using senses to evaluate the dishes made. How kitchen utensils are used for slicing, grating, peeling, mashing.	the food in general that is prepared in this way. Savoury dishes are meals that are not sweet. A dessert is a sweet dish eaten at the end of a meal. A ploughman's lunch is a British dish. It is a meal of bread and cheese, typically with pickle and salad. The recommended daily allowance (RDA) is the level of food intake which needs the needs of an individual. Nutrition information labels can help you choose between products and keep a check on the amount of foods you're eating that are high in fat, salt and added sugars. Most pre-packed foods have a nutrition information label on the back or side of the packaging. Nutrition information labels to help you eat a balanced diet. Most people in the UK eat and drink too many calories, too much fat, sugar and salt, and not enough fruit, vegetables, oily fish or fibre. Seasonal foods are the foods most likely to be available at that time of year.	Different areas of the world have different climates. These are called climate zones. There are five types of climate zones – Polar, temperate, dry, tropical, Mediterranean. Food miles describe the distance that food travels from where it is grown or produced to where it is consumed. Seasonality refers to the times of year when different fruits, vegetables and other crops are ready to be harvested naturally. The properties of food can change when cooked or cooled.	combination, enhance, balance, pairing, taste. Which seasonal fruit and vegetables are available when designing recipes. There are five food groups: fruit and vegetables, carbohydrates, proteins, dairy, fats and oils. Use a range of measurements for ingredients (ml, l, g, kg), accurately measuring requirements. Preparation time is the amount of time it takes to prepare a recipe before cooking. This includes gathering ingredients, measuring, chopping and other tasks. A variety of cooking methods: boiling, poaching, air-frying, baking, BBQ, stewing, frying, grilling, microwaving, roasting. Use ratio and proportion to change amounts of a recipe.	The Ministry of Food was responsible for overseeing rationing. Every man, woman and child was given a ration book with coupons. These were required before rationed goods could be purchased. Basic foodstuffs such as sugar, meat, fats, bacon and cheese were directly rationed by an allowance of coupons. Housewives had to register with particular retailers. Governments encouraged people to grow as much of their own food as possible. Some people ate better during this rationing period than they did before. This is because everyone was supplied the same weekly quota of food, whether rich or poor. The Eatwell Guide shows that to have a healthy, balanced diet, people should try to: - eat at least 5 portions of a variety of fruit and vegetables every day (see 5 A Day) - base meals on higher fibre starchy foods like potatoes, bread, rice or pasta - have some dairy or dairy alternatives (such as soya drinks) - eat some beans, pulses, fish, eggs, meat and other protein - choose unsaturated oils and spreads, and eat them in small amounts
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*- drink plenty of fluids (at
least 6 to 8 glasses a day)*

