

Design Technology Curriculum Progression
Peasedown St John School

Creativity is allowing yourself to make mistakes. Design is knowing which ones to keep.

Scott Adams

Our pupils will combine creative and critical thinking with technical knowledge and skills to solve real life problems by designing and making quality products.

At Peasedown St John, our curriculum intent for Design Technology is important to us as a school, as it ensures children are able to achieve the best learning outcomes possible. It reflects the purposes and aims taken from the national curriculum, inspiring our pupils to develop their creative and critical thinking skills and to apply these, together with learnt skills and knowledge to make products in order to solve practical problems. We make use of a commercial scheme, Kapow, ensuring that each unit is adapted to meet our school curriculum drivers whilst also meeting the expectations of the National Curriculum.

National Curriculum Breadth of Study in Design Technology

| | <i>EYFS</i> | <i>KS1</i> | | <i>KS2</i> | | | |
|---|---|--|---------------|--|---------------|---------------|---------------|
| | | <i>Year 1</i> | <i>Year 2</i> | <i>Year 3</i> | <i>Year 4</i> | <i>Year 5</i> | <i>Year 6</i> |
| Cooking and Nutrition | Children are offered opportunities to taste, touch, smell foods through practical and real life situations. | <ul style="list-style-type: none"> use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from | | <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 | | | |
| Skills / Disciplines and knowledge | Building the foundations in Early Years PSJ- Creating wit... PSJ- Technology | <u>Design</u> <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 <u>Make</u> <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 <u>Evaluate</u> <ul style="list-style-type: none"> explore and evaluate a range of existing products evaluate their ideas and products against design criteria | | <u>Design</u> <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 <u>Make</u> <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 <u>Evaluate</u> <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 | | | |

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| | | <p><u>Technical knowledge</u></p> <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 | <p><u>Technical knowledge</u></p> <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 |
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We encourage creativity and imagination; enabling pupils to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. Children will acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. As a reflection of the real world, some aspects of Design Technology will be covered and revisited through meaningful links with these other curriculum areas. Our pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens who relish a challenge. Through the evaluation of past and present design and technology, our children develop a critical understanding of its impact on daily life and the wider world.

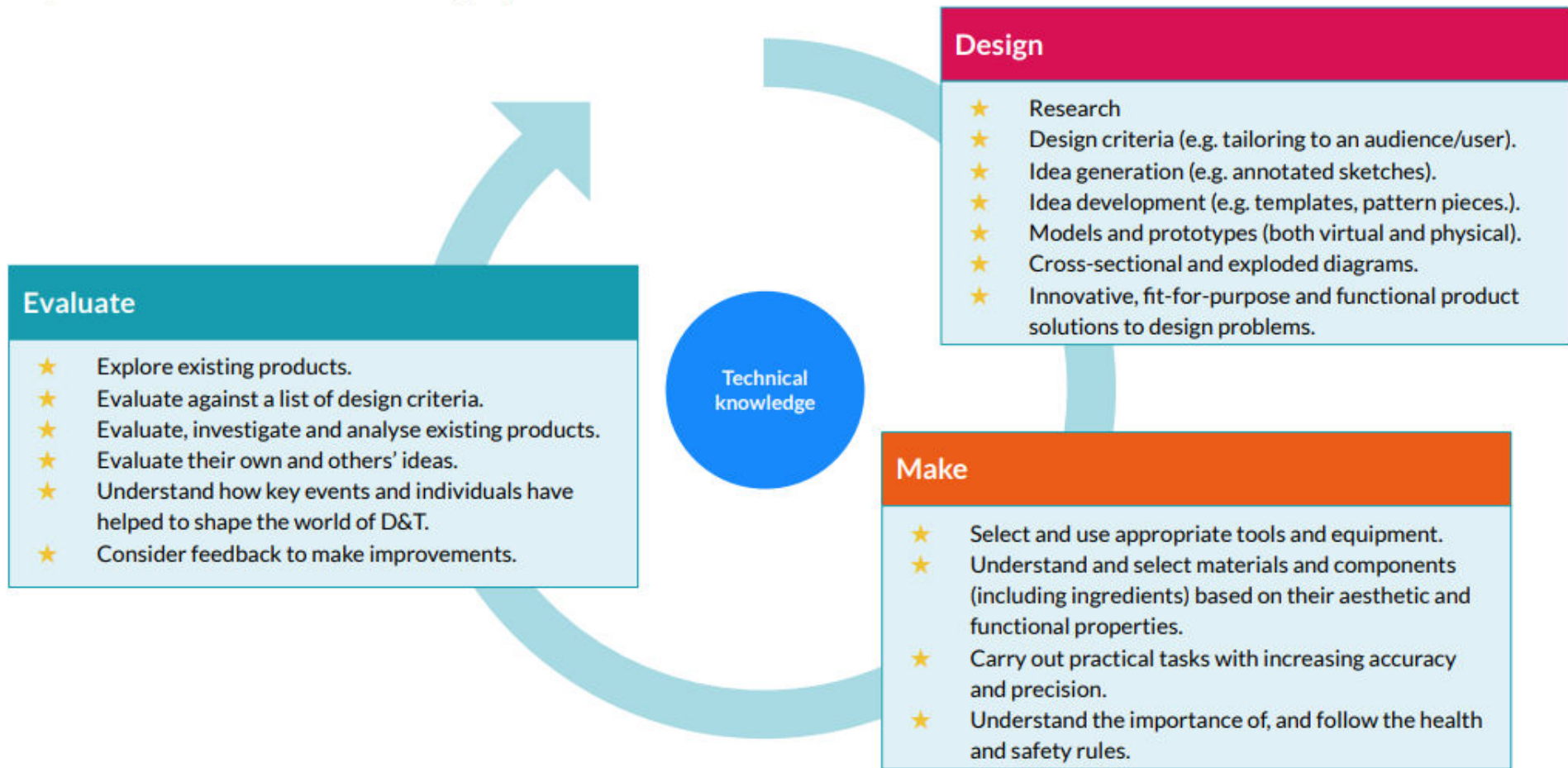
Our Design Technology curriculum builds children's knowledge and technical skills through the structured 'Design, Make, Evaluate' process. We aim to teach children to consider a product's user and functionality when making design decisions, encouraging innovation and authenticity. This process also applies to our cooking and nutrition units where children are taught how to cook and apply the principles of nutrition and healthy eating. 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. We therefore ensure that all food and nutrition units have a real purpose, such as a class picnic.

We have chosen 'big ideas' (also known as 'threshold concepts') that build throughout our DT curriculum, each idea being revisited within the different key areas of the DT curriculum. These help children to develop conceptual understanding over time and to link old learning to new learning. The subject topics are mapped out to ensure coverage and to identify, logically and systematically, a clear progression in learning linked to these Big Ideas.

The Big Ideas in DT are: Design, Make (which includes practical skills), Evaluate and Technical Knowledge (which encompasses the contextual, historical and technical understanding required)

The Key Areas within which these Big Ideas build over time are: Cooking and Nutrition, Mechanical Systems, Structures, Textiles, Electrical Systems and Digital World

Our Big Ideas Explained



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Our Key Areas Explained

EYFS (Reception) Key Stage 1 and 2

Cooking and nutrition

Where food comes from, balanced diet, preparation and cooking skills. Kitchen hygiene and safety. Following recipes.



**Mechanisms/
Mechanical systems**

Mimic natural movements using mechanisms such as cams, followers, levers and sliders.



Key Stage 2

Structures

Material functional and aesthetic properties, strength and stability, stiffen and reinforce structures.



Textiles

Fastening, sewing, decorative and functional fabric techniques including cross stitch, blanket stitch and appliqué.



Electrical systems

Operational series circuits, circuit components, circuit diagrams and symbols, combined to create various electrical products.



Digital world

Program products to monitor and control, develop designs and virtual models using 2D and 3D CAD software.



























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Our Overview of Design technology Units (How we have organised the N.C. Breadth of Study)

| | <i>N</i> | <i>R</i> | <i>Year 1</i> | <i>Year 2</i> | <i>Year 3</i> | <i>Year 4</i> | <i>Year 5</i> | <i>Year 6</i> |
|--|---|---|--------------------------------|------------------------------|------------------------------|--------------------------|-----------------------------|---|
| Structures  | Building homes and Bridges Building Homes for minibeasts. | Design an assault course Design a Diva Lamp Design a castle | Windmills | Baby Bear's Chair | Trinket boxes | Pavilions | Bridges | |
| Mechanisms / Mechanical Systems  | Kite Making | Design a vehicle that moves or floats | Moving Story Book | | Pneumatic Toy | Cams Automata | Pulleys | |
| | | | Wheels and Axles | Moving Monster | | | | |
| Textiles | Design and make an Easter card. Shell Printing | Design a shadow puppet Design a clay fossil of a part of a dinosaur. | Easter Puppets | Christmas Pouches | Cushions | | | T.Shirt bag |
| Electrical Systems  | | | | | | Torches | | Steady Hand Game (summer fayre) |
| Digital World  | | | | | eCharm and Pouch | | Monitoring Devices | Navigate the world |
| Cooking and Nutrition  | Design a healthy filling for a pancake. Seasonal and cultural food tasting | | Fruit Smoothie (summer picnic) | Healthy Wrap (summer picnic) | Rainbow Tart (summer picnic) | Easter Biscuits (1 week) | Bolognese (harvest - 1 day) | 3 course meal (harvest or Christmas supper) |

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| Term | TERM 1 7.5 weeks | | | | | | | | TERM 2 7 weeks | | | | | | | TERM 3 5.5 weeks | | | | | TERM 4 6 weeks | | | | | | TERM 5 6 weeks | | | | | | TERM 6 7 weeks | | | | | | | | | | | | | | | | |
|---------------|--|---|---|---|---------|---|---|---|--|---|---|-----|---|---|---|---|---|---|---|---|---|---|-------|---|---|---|--|---|-----|---|---|---|---|---|---|------|---|---|---|--|--|--|--|--|--|--|--|--|--|
| | September | | | | October | | | | November | | | Dec | | | | January | | | | | Feb | | March | | | | April | | May | | | | June | | | July | | | | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | | |
| EYFS | See Nursery and Reception Curriculum Maps and Progression Documents  PSJ- Creating with materials and  PSJ- Technology | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Year 1 | ART | | | | | | | | Wheels and Axles  | | | | | | | ART | | | | | Moving Story Book AND Puppets (1 week)  | | | | | | ART | | | | | | Windmills AND Fruit Smoothie (1 day: summer picnic)   | | | | | | | | | | | | | | | | |
| Year 2 | Moving Monster AND Christmas Pouches (1 week)  | | | | | | | | ART | | | | | | | Baby Bear's Chair  | | | | | ART | | | | | | ART | | | | | | Healthy Wrap (1 day: summer picnic)  | | | | | | | | | | | | | | | | |
| Year 3 | Cushions AND eCharm Pouch (1 week)  | | | | | | | | ART | | | | | | | Pneumatic Toy  | | | | | ART | | | | | | ART | | | | | | Trinket boxes AND Rainbow Tart (1 day: summer picnic)   | | | | | | | | | | | | | | | | |
| Year 4 | ART | | | | | | | | Cams: Automata  | | | | | | | ART | | | | | Pavilions AND Easter Biscuits (1 week)   | | | | | | Torches  | | | | | | ART | | | | | | | | | | | | | | | | |
| Year 5 | Bridges AND Bolognese (harvest - 1 day)   | | | | | | | | ART | | | | | | | Monitoring Devices  | | | | | ART | | | | | | Pulleys  | | | | | | ART | | | | | | | | | | | | | | | | |
| Year 6 | ART | | | | | | | | T-shirt bag AND 3 course meal (harvest or Christmas supper)  | | | | | | | ART | | | | | ART | | | | | | SATS | | | | | | Navigate the world AND Steady Hand Game (summer fayre)   | | | | | | | | | | | | | | | | |

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Links to whole school curriculum drivers

In regards to curriculum breadth, we have adapted the purposes and aims to ensure that it reflects the context of our school and the community it serves, aiming to improve children’s awareness of Fundamental British Values (FBV), Spiritual, Moral, Social and Cultural development and global issues. Attention will be paid to how existing products impact on society and the natural environment in both positive and negative ways. When making choices in designs with use of different systems, as well as materials, there will be a strong focus on considering environmental factors. Likewise, designs and products are evaluated for suitability to all members of society, encouraging inclusive awareness and thinking. Therefore, when children are exposed to these aspects of the whole curriculum, it will motivate and encourage them, enabling them to improve their cultural capital and to become thoughtful (environmentally sensitive), respectful and knowledgeable citizens.

The way that we have designed the curriculum engages pupils to read a wider breadth of fiction and non-fiction texts. We prioritise reading at PSJ by exploring different types of genres and texts to help children discover new information, both visually and through the written word. This enables us to put topics within subjects into a meaningful context, whilst building upon previous learning. As well as this, it helps children to recall important information and embed learnt knowledge from the short-term memory into the long-term memory. Through reading, we aim to expose children with differing needs to high-quality texts, with the aim of developing a wider range of vocabulary across all curriculum subjects, thereby building their cultural capital. In Design Technology we aim to promote reading and vocabulary by using texts as provocations and inspiration for problem solving opportunities. Through literature children empathise with people, or creatures, in different contexts and seek to solve problems through product designs. Simple problems are introduced through picture books and traditional stories in EY and KS1 and KS2 children use texts for research into products and product design.


| | EYFS | | KS1 | | LKS2 | | UKS2 | |
|---|---|---|--|--|---|---|--|--|
| | N | R | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| <i>Community links - local and global, diversity and commonality</i> | Tasting food from around the world linked to different cultural events Minibeast homes and shell printing - caring for our environment Easter cards | Solving real life problems - links to global issues Designing and evaluating products for inclusivity and sustainability Design Technology Day Community Christmas Cards | Solving real life problems - links to global issues Designing and evaluating products for inclusivity and sustainability Design Technology Day Community Christmas Cards (moving parts) | Solving real life problems - links to global issues Designing and evaluating products for inclusivity and sustainability Design Technology Day Community Christmas Cards (moving parts) Explore how levers are used for pumping of water in developing nations. Textile artist ; Kaffe Fasset | Solving real life problems - links to global issues Designing and evaluating products for inclusivity and sustainability Design Technology Day Community Christmas Cards (moving parts) Making gifts for old age home (if doing cushions) | Solving real life problems - links to global issues Designing and evaluating products for inclusivity and sustainability Design Technology Day Community Christmas Cards (moving parts) Examine the design of Pulteney bridge in Bath Local butcher - visit or zoom link | Solving real life problems - links to global issues Designing and evaluating products for inclusivity and sustainability Design Technology Day Community Christmas Cards (moving parts) | Solving real life problems - links to global issues Designing and evaluating products for inclusivity and sustainability Design Technology Day Community Christmas Cards (moving parts) <i>Links with Writhlington</i> |

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| | | | | Members of WI to help with sewing | Cushion maker Paboy Pojang (refugee living in Italy). Members of WI to help with sewing | | | |
| <i>Visits, opportunities and experiences</i> | | Interview an Engineer If I Were an Engineer Competition | Interview an Engineer If I Were an Engineer Competition Wheelchair basketball (wheels and axles) | Interview an Engineer If I Were an Engineer Competition Possible visit or zoom link with Bath uni engineering students - wheels and axles | Interview an Engineer If I Were an Engineer Competition Possible visit or zoom link with Bath uni engineering students - pneumatics | Interview an Engineer If I Were an Engineer Competition Visit and evaluate the pavilion in the school conservation area and the Jubilee one in Beacon Field. Possible visit or zoom link with Bath uni engineering students - Local butcher - visit or zoom link | Interview an Engineer If I Were an Engineer Competition | Interview an Engineer If I Were an Engineer Competition Opportunity to visit Writhlington facilities and use equipment such as 3D printer. Possible visit or zoom link with Bath uni engineering students - Cams |
| <i>High quality books - fiction and non-fiction</i> | Dear Zoo | Whatever Next Billy Goats Gruff Goldilocks Gingerbread Man Little Robin Red Vest Handa's Surprise | The Smartest Giant in Town Peace at Last Caps for Sale Oliver's Fruit Salad | The Lighthouse Keeper's Lunch Pocket Dogs The Homes We Build | 100 things to know about architecture Dalia Adillon | Oscar and the Bird - A book about electricity Making Moving Toys and Automata Robert Race | 100 things to know about inventions - Clive Gifford | James Dyson's History of Great Inventions The Tunnels Below Nadine Wild-Palmer (fiction) |

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Summary of key knowledge, skills and vocabulary that we teach through our Big Ideas and Key Areas

| | EYFS | | KS1 | | LKS2 | | UKS2 | |
|--|--|---|--|---|---|--|---|--------|
| | N | R | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| <p>Structures - technical knowledge</p>  | <ul style="list-style-type: none"> • Uses various construction materials, e.g. joining pieces, stacking vertically and horizontally, balancing, making enclosures and creating spaces | <ul style="list-style-type: none"> - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; | <p>Windmills</p> <ul style="list-style-type: none"> • To understand that the shape of materials can be changed to improve the strength and stiffness of structures. • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • To understand that axles are used in structures and mechanisms to make parts turn in a circle. • To begin to understand that different structures are used for different purposes. • To know that a structure is something that has been made and put together. <p>Additional Knowledge:</p> <ul style="list-style-type: none"> • To know that a client is the person I am | <p>Baby Bear's Chair</p> <ul style="list-style-type: none"> • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily. | <p>Trinket boxes</p> <ul style="list-style-type: none"> • To understand the importance of strength and stiffness in structures. <p>Additional Knowledge:</p> <ul style="list-style-type: none"> To know that a trinket box is a shell structure with the purpose of containing. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product. | <p>Pavilions</p> <ul style="list-style-type: none"> • To understand what a frame structure is. • To know that a 'free-standing' structure is one which can stand on its own. <p>Additional Knowledge:</p> <ul style="list-style-type: none"> • To know that a pavilion is a a decorative building or structure for leisure activities. • To know that cladding can be applied to structures for different effects. • To know that aesthetics are how a product looks. • To know that a product's function means its purpose. • To understand that the target audience means the person or group of people a product is designed for. • To know that architects | <p>Bridges</p> <ul style="list-style-type: none"> • To understand some different ways to reinforce structures. • To understand how triangles can be used to reinforce bridges. • To know that properties are words that describe the form and function of materials. • To understand why material selection is important based on properties. • To understand the material (functional and aesthetic) properties of wood. <p>Additional Knowledge:</p> <ul style="list-style-type: none"> • To understand the difference between arch, beam, truss and suspension bridges. • To understand how to carry and use a saw safely | |



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| | | | <p>designing for.</p> <ul style="list-style-type: none"> • To know that design criteria is a list of points to ensure the product meets the clients needs and wants. • To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. • To know that windmill turbines use wind to turn and make the machines inside work. • To know that a windmill is a structure with sails that are moved by the wind. • To know the three main parts of a windmill are the turbine, axle and structure. | | | <p>consider light, shadow and patterns when designing.</p> | | |
| <p>Design</p>  | | | <ul style="list-style-type: none"> • Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design. | <ul style="list-style-type: none"> • Generating and communicating ideas using sketching and modelling. | <p>Exploring existing designs to identify key features</p> <ul style="list-style-type: none"> • Designing a container with key features to appeal to a specific person/purpose. • Drawing and | <ul style="list-style-type: none"> • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures | <ul style="list-style-type: none"> • Designing a stable structure that is able to support weight. • Creating a frame structure with a focus on triangulation. Create a structure that spans a gap. | |

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| | | | | | labelling a Trinket box design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. <ul style="list-style-type: none"> • Designing and/or decorating a trinket box tower on CAD software. | designed to support weight. | | |
| Make | <ul style="list-style-type: none"> • Uses tools for a purpose | <p>- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function;</p> | <ul style="list-style-type: none"> • Making stable structures from card, tape and glue. • Learning how to turn 2D nets into 3D structures. • Following instructions to cut and assemble the supporting structure of a windmill. • Making functioning turbines and axles which are assembled into a main supporting structure. | <ul style="list-style-type: none"> • Making a structure according to design criteria. • Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper | <ul style="list-style-type: none"> • Constructing a range of 3D geometric shapes • Using careful scoring, folding and joining to construct precision product using nets . • Creating special features for individual designs. • Constructing internal features such as compartments • Constructing a lid that is secure • Protecting contents of the trinket box by adding cushioning, waterproofing. or laminating | <ul style="list-style-type: none"> • Creating a range of different shaped frame structures. • Making a variety of free standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials. | <ul style="list-style-type: none"> • Making a range of different shaped beam bridges. • Using triangles to create truss bridges that span a given distance and support a load. • Building a wooden bridge structure. • Independently measuring and marking wood accurately. • Selecting appropriate tools and equipment for particular tasks. • Using the correct techniques to saw safely. • Identifying where a structure needs reinforcement and using card corners for support. • Explaining why | |

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| | | | | | | | selecting appropriating materials is an important part of the design process. • Understanding basic wood functional properties. | |
| <p>Evaluate</p>  <p>Evaluate</p> | | - Share their creations, explaining the process they have used; | <ul style="list-style-type: none"> • Begin to understand that we evaluate our product against our design | <ul style="list-style-type: none"> • Testing the strength of one's own structure. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure. | <ul style="list-style-type: none"> • Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs. | <ul style="list-style-type: none"> • Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs. | <ul style="list-style-type: none"> • Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. • Suggesting points for improvements for own bridges and those designed by others. | |
| <p>Mechanical systems - technical knowledge</p>  <p>Mechanical Systems</p> | <ul style="list-style-type: none"> • Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images | - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; | <p><u>Moving Story Book</u></p> <ul style="list-style-type: none"> • To know that a mechanism is the parts of an object that move together. • To know that a slider mechanism moves an object from side to side. • To know that a slider mechanism has a slider, slots, guides and an object. • To know that bridges and guides are bits of card that purposefully | <p><u>Moving Monster</u></p> <ul style="list-style-type: none"> • To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working. • To know that an | <p><u>Pneumatic Toy</u></p> <ul style="list-style-type: none"> • To understand how pneumatic systems work. • To understand that pneumatic systems can be used as part of a mechanism. • To know that pneumatic systems operate by drawing in, releasing and compressing air <p>Additional Knowledge:</p> <ul style="list-style-type: none"> • To understand how sketches, drawings and | <p><u>Automata</u></p> <ul style="list-style-type: none"> • To know that linkages change the direction of a force. • To understand that the mechanisms in an automata uses a system of cams, axles and followers. • To understand that different shaped cams produce different outputs. • To know that an automata is a hand powered mechanical toy. | <p><u>Pulleys</u></p> <ul style="list-style-type: none"> • To understand that mechanical systems have an input, process and output • To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand that pulleys can be used to speed | |

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| | | | <p>restrict the movement of the slider. Additional Knowledge:</p> <ul style="list-style-type: none"> • To know that in Design and technology we call a plan a 'design'. <p><u>Wheels and Axles</u></p> <ul style="list-style-type: none"> • To know that wheels need to be round to rotate and move. • To understand that for a wheel to move it must be attached to a rotating axle. • To know that an axle moves within an axle holder which is fixed to the vehicle or toy. • To know that the frame of a vehicle (chassis) needs to be balanced. <p>Additional Knowledge:</p> <ul style="list-style-type: none"> • To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles. | <p>output is the movement that happens as a result of the input.</p> <ul style="list-style-type: none"> • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism is made up of a series of levers <p>Additional Knowledge:</p> <ul style="list-style-type: none"> • To know some real-life objects that contain mechanisms. | <p>diagrams can be used to communicate design ideas.</p> <ul style="list-style-type: none"> • To know that exploded-diagrams are used to show how different parts of a product fit together. • To know that thumbnail sketches are small drawings to get ideas down on paper quickly. | <p>Additional Knowledge:</p> <ul style="list-style-type: none"> • To know that aesthetics means how an object or product looks in design and technology. • To know that a template is a stencil you can use to help you draw the same shape accurately. • To know that a cross sectional diagram shows the inner workings of a product. • To know that graphics are images which are designed to explain or advertise something. • To know that it is important to assess and evaluate design ideas and models against a list of design criteria. | <p>up or slow down movement.</p> <p>Additional Knowledge:</p> <ul style="list-style-type: none"> • To know that a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing. | |
| Design | | | <p><u>Moving Story Book</u></p> <ul style="list-style-type: none"> • Explaining how to adapt mechanisms, using bridges or | <p><u>Moving Monster</u></p> <ul style="list-style-type: none"> • Creating a class design criteria for a moving monster. | <p><u>Pneumatic Toy</u></p> <ul style="list-style-type: none"> • Designing a toy which uses a pneumatic system. • Developing | <p><u>Automata toy</u></p> <ul style="list-style-type: none"> • Experimenting with a range of cams creating a design for an automata toy | <p><u>Pulley device</u></p> <ul style="list-style-type: none"> • Designing a pulley device in order to make the work of lifting easier | |

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|  <p align="center">Design</p> | | | <p>guides to control the movement.</p> <ul style="list-style-type: none"> • Designing a moving story book for a given audience. <p><u>Wheels and Axles</u></p> <ul style="list-style-type: none"> • Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. • Creating clearly labelled drawings that illustrate movement. | <ul style="list-style-type: none"> • Designing a moving monster for a specific audience in accordance with a design criteria. | <p>design criteria from a design brief.</p> <ul style="list-style-type: none"> • Generating ideas using thumbnail sketches and exploded diagrams. • Learning that different types of drawings are used in design to explain ideas clearly. | <p>based on a choice of cams to create the desired movement.</p> <ul style="list-style-type: none"> • Understanding and drawing cross-sectional diagrams to show the inner workings of the product • Consider ways to hide the mechanism of the cam system | <ul style="list-style-type: none"> • Naming each mechanism, input and output accurately. • Experimenting with a range of pulleys to create a desired movement. • Understanding how pulleys change the direction of a movement. • Understanding the relationship of mechanical advantage in a pulley system. • Understanding and drawing cross-sectional diagrams to show the inner-workings of my design. | |
| <p>Make</p> | <p>Uses tools for a purpose</p> | <p>- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function;</p> | <p><u>Moving Story Book</u></p> <ul style="list-style-type: none"> • Following a design to create moving models that use levers and sliders. <p><u>Wheels and Axles</u></p> <ul style="list-style-type: none"> • Adapting mechanisms, when: • they do not work as they should. • to fit their vehicle design. • to improve how | <p><u>Moving Monster</u></p> <ul style="list-style-type: none"> • Making linkages using cardboard for levers and split pins for pivots. • Experimenting with linkages adjusting the widths, lengths and thicknesses of cardboard used. • Cutting and assembling components neatly. | <p><u>Pneumatic Toy</u></p> <ul style="list-style-type: none"> • Creating a pneumatic system to create a desired motion. • Building secure housing for a pneumatic system. • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Selecting materials due to | <p><u>Automata</u></p> <ul style="list-style-type: none"> • Measuring, marking, cutting and assembling with accuracy • Making a model based on a chosen design. • Assembling components accurately to make a stable frame • Assembling cam components carefully in order for the cams to rotate easily on the axle | <p><u>Pulley device</u></p> <ul style="list-style-type: none"> • Following a design brief to make a pulley device to lift a weight. • Making mechanisms and/or structures using pulleys to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. | |

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| | | | <p>they work after testing their vehicle.</p> | | <p>their functional and aesthetic characteristics. • Manipulating materials to create different effects by cutting, creasing, folding and weaving.</p> | | <ul style="list-style-type: none"> • Checking the accuracy of the jetulong and dowel pieces required • Making a model based on a chosen design. • Assembling components accurately to make a stable frame • Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles • Selecting appropriate materials based on the speed at which glue dries | |
| <p>Evaluate</p>  <p>Evaluate</p> | | <p>- Share their creations, explaining the process they have used;</p> | <p><u>Moving Story Book</u></p> <ul style="list-style-type: none"> • Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. • Reviewing the success of a product by testing it with its intended audience. <p><u>Wheels and Axles</u></p> | <p><u>Moving Monster</u></p> <ul style="list-style-type: none"> • Evaluating own designs against design criteria. • Using peer feedback to modify a final design. | <p><u>Pneumatic Toy</u></p> <ul style="list-style-type: none"> • Using the views of others to improve designs. • Testing and modifying the outcome, suggesting improvements. • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client. | <p><u>Automata Toys</u></p> <ul style="list-style-type: none"> • Evaluating own work for function and form • Evaluating the work of others and receiving feedback on own work • Evaluating the ease of movement | <p><u>Pulley Device</u></p> <ul style="list-style-type: none"> • Evaluating the work of others and receiving feedback on their own work. • Assess how effectively the device lifted the load • Evaluate how successful the device design was in solving the contextual problem | |


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| | | | <ul style="list-style-type: none"> • Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move. | | | | | |
| <p><i>Textiles - technical knowledge</i></p> | <ul style="list-style-type: none"> • Plays with a range of materials to learn cause and effect, for example, makes a string puppet using dowels and string to suspend the puppet | | <p><u>Easter Puppets</u></p> <ul style="list-style-type: none"> • To know that 'joining technique' means connecting two pieces of material together. • To know that there are various temporary methods of joining fabric by using staples, glue or pins. • To understand that different techniques for joining materials can be used for different purposes. • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • To know that drawing a design idea is useful to see how an idea will look. | <p><u>Christmas Pouches</u></p> <ul style="list-style-type: none"> • To know that sewing is a method of joining fabric. • To know that different stitches can be used when sewing. • To understand the importance of tying a knot after sewing the final stitch. • To know that a thimble can be used to protect my fingers when sewing. | <p><u>Cushions</u></p> <ul style="list-style-type: none"> • To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. • To know that when two edges of fabric have been joined together it is called a seam. • To know that it is important to leave space on the fabric for the seam. • To understand that some products are turned inside out after sewing so the stitching is hidden. | | | <p><u>T.shirt Bags</u></p> <ul style="list-style-type: none"> • To learn cross stitch as a decorative stitch • To understand there are different types of fabrics with different characteristics. • To design using a template. • To cut the fabric using a template • To know different ways to attach fastenings • To be able to attach a pocket onto an item • To know that when two edges of fabric have been joined together it is called a seam. • To know that it is important to leave space on the fabric for the seam. • To turn pieces of fabric inside out after sewing so the stitching is |

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| | | | | | | | | hidden. •To consider the strength of the fabric and the joins in order for the completed product to be able to bare weight •To ensure all joins in the fabric are secure |
| <p>Design</p>  | | - Make use of props and materials when role playing characters in narratives and stories. | <p><u>Easter Puppets</u></p> <ul style="list-style-type: none"> • Using a template to create a design for a puppet. | <p><u>Christmas Pouches</u></p> <ul style="list-style-type: none"> • Designing a pouch. | <p><u>Cushions</u></p> <ul style="list-style-type: none"> • Designing and making a template from an existing cushion and applying individual design criteria. | | | <p><u>T.shirt Bag</u></p> <p>Use a template to create the T shirt design</p> |
| <p>Make</p> | Uses tools for a purpose | | <p><u>Easter Puppets</u></p> <ul style="list-style-type: none"> • Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing steps for construction. | <p><u>Christmas Pouches</u></p> <ul style="list-style-type: none"> • Selecting and cutting fabrics for sewing. • Decorating a pouch using fabric glue or running stitch. • Threading a needle. • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric. • Neatly pinning and cutting fabric using a template. | <p><u>Cushions</u></p> <ul style="list-style-type: none"> • Following design criteria to create a cushion • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles with greater independence. • Tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Completing design ideas with embellishing the | | | <ul style="list-style-type: none"> • Following design criteria to create a bag • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles with greater independence. • Tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Completing design ideas with embellishing the |



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| | | | | | cushions based on design ideas. <i>Deepen the moment: Take ideas from the Fastenings unit and add a button or zip to the pouch</i> | | | bags based on design ideas. Use a mixture of contrasting and matching thread depending on the purpose of stitching. Reinforce and strengthen fabric in order for the bag to hold a load. Securely attach a strap/handle for the bag. Consider ways to fasten the bag with a button or other fastening. |
| <p>Evaluate</p>  | | | <p>Easter Puppets</p> <ul style="list-style-type: none"> • Reflecting on a finished product, explaining likes and dislikes. | <p>Christmas Pouches</p> <ul style="list-style-type: none"> • Troubleshooting scenarios posed by teacher. • Evaluating the quality of the stitching on others' work. • Discussing as a class, the success of their stitching against the success criteria. • Identifying aspects of their peers' work that they particularly like and why. | <p>Cushions</p> <ul style="list-style-type: none"> • Evaluating an end product and thinking of other ways in which to create similar items. | | | Identify what worked well and the areas for improvement Test out the bag against the design criteria can it hold the weight of a filled water bottle |
| <p>Electrical Systems-technical knowledge</p> | <ul style="list-style-type: none"> • Knows how to operate simple equipment, e.g. turns on CD | | | | | <p>Torches</p> <ul style="list-style-type: none"> • To know that an electrical circuit must be complete | | <p>Steady Hand Game</p> <ul style="list-style-type: none"> • To know that batteries contain |

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|  <p align="center">Electrical Systems</p> | <p>player, uses a remote control, can navigate touch-capable technology with support</p> | | | | | <p>for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit. Additional Knowledge:</p> <ul style="list-style-type: none"> • To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. • To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison. | | <p>acid, which can be dangerous if they leak. • To know the names of the components in a basic series circuit, including a buzzer. Additional Knowledge:</p> <ul style="list-style-type: none"> • To understand the diagram perspectives 'top view', 'side view' and 'back'. |
| <p><i>Design</i></p>  <p align="center">Design</p> | | | | | | <p>Torches</p> <ul style="list-style-type: none"> • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. | | <p>Steady Hand Game</p> <ul style="list-style-type: none"> • Designing a steady hand game - identifying and naming the components required. • Drawing a design from three different perspectives. • Generating ideas through sketching and discussion. • Modelling ideas through prototypes. |
| <p><i>Make</i></p> | | | | | | <p>Torches</p> <ul style="list-style-type: none"> • Making a torch with a working | | <p>Steady Hand Game</p> |

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| | | | | | | <p>electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria.</p> | | <ul style="list-style-type: none"> • Constructing a stable base for a game. • Accurately cutting, folding and assembling a net. • Decorating the base of the game to a high quality finish. • Making and testing a circuit. • Incorporating a circuit into a base |
| <p><i>Evaluate</i></p>  <p>Evaluate</p> | | | | | | <p>Torches</p> <ul style="list-style-type: none"> • Evaluating electrical products. • Testing and evaluating the success of a final product. | | <p>Steady Hand Game</p> <ul style="list-style-type: none"> • Testing own and others finished games, identifying what went well and making suggestions for improvement. <i>NB These could be used as a stall at the summer fayre</i> |
| <p>Digital World - technical knowledge</p>  <p>I.T systems</p> | <ul style="list-style-type: none"> • Shows an interest in technological toys with knobs or pulleys, real objects such as cameras, and touchscreen devices such as mobile phones and tablets • Knows that information can be retrieved from digital devices and the internet | | | | <p>Christmas eCharm Pouch</p> <ul style="list-style-type: none"> • To understand that, in programming, a 'loop' is code that repeats something again and again until stopped. • To know that a Micro:bit is a pocket-sized, codeable computer <p>Additional Knowledge:</p> <ul style="list-style-type: none"> •To know what | | <p>Monitoring Devices</p> <ul style="list-style-type: none"> • To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record. • To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a | <p>Navigate the World</p> <ul style="list-style-type: none"> • To know that accelerometers can detect movement. • To understand that sensors can be useful in products as they mean the product can function without human input. <p>Additional Knowledge:</p> <ul style="list-style-type: none"> • To know that designers write design briefs and |


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| | | | | | <p>the 'Digital Revolution' is and features of some of the products that have evolved as a result. •To know that in Design and technology the term 'smart' means a programmed product. •To know the difference between analogue and digital technologies. • To understand what is meant by 'point of sale display.' • To know that CAD stands for 'Computer-aided design'.</p> | | <p>purpose. • To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met. Additional Knowledge: • To understand key developments in thermometer history. • To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future. • To know the 6Rs of sustainability. • To understand what a virtual model is and the pros and cons of traditional vs CAD modelling.</p> | <p>develop design criteria to enable them to fulfil a client's request. • To know that 'multifunctional' means an object or product has more than one function. • To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.</p> |
| <p>Design</p>  <p>Design</p> | | | | | <p><u>Christmas eCharm Pouch</u></p> <ul style="list-style-type: none"> • Problem solving by suggesting potential features on a Micro: bit and justifying my ideas. • Developing design ideas for a technology pouch. • Drawing | | <p><u>Monitoring Devices</u></p> <ul style="list-style-type: none"> • Researching (books, internet) for a particular (user's) animal's needs. • Developing design criteria based on research. • Generating | <p><u>Navigate the World</u></p> <ul style="list-style-type: none"> • Writing a design brief from information submitted by a client. • Developing design criteria to fulfil the client's request. • Considering and |

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| | | | | | and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge | | multiple housing ideas using building bricks. • Understanding what a virtual model is and the pros and cons of traditional and CAD modelling. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of, or combining one or more 3D objects, using CAD. | suggesting additional functions for my navigation tool. • Developing a product idea through annotated sketches. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of, or combining one or more 3D objects, using CAD. |
| <i>Make</i> | | | | | <p><u>Christmas eCharm Pouch</u></p> <ul style="list-style-type: none"> • Using a template when cutting and assembling the pouch. • Following a list of design requirements. • Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch. • Applying functional features such as using foam to create soft buttons. | | <p><u>Monitoring Devices</u></p> <ul style="list-style-type: none"> • Understanding the functional and aesthetic properties of plastics. • Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range. | <p><u>Navigate the World</u></p> <ul style="list-style-type: none"> • Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo). • Explaining material choices and why they were chosen as part of a product concept. • Programming an N,E, S, W cardinal compass. |
| <i>Evaluate</i> | | | | | <u>Christmas eCharm Pouch</u> | | <u>Monitoring Devices</u> | <u>Navigate the World</u> |

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|  <p align="center">Evaluate</p> | | | | | <ul style="list-style-type: none"> • Analysing and evaluating an existing product. • Identifying the key features of a pouch. | | <ul style="list-style-type: none"> • Stating an event or fact from the last 100 years of plastic history. • Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices. • Explaining key functions in my program (audible alert, visuals). • Explaining how my product would be useful for an animal carer including programmed features. | <ul style="list-style-type: none"> • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. • Developing an awareness of sustainable design. • Identifying key industries that utilise 3D CAD modelling and explaining why. • Describing how the product concept fits the client's request and how it will benefit the customers. • Explaining the key functions in my program, including any additions. • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch. • Demonstrating a functional program as part of a product concept pitch. |
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Food and Nutrition - technical knowledge



Fruit Smoothie (summer picnic)

- Understanding the difference between fruits and vegetables.
- To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).
- To know that a blender is a machine which mixes ingredients together into a smooth liquid.
- To know that a fruit has seeds and a vegetable does not.
- To know that fruits grow on trees or vines.
- To know that vegetables can grow either above or below ground.
- To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).

Healthy Wrap (summer picnic)

- To know that 'diet' means the food and drink that a person or animal usually eats.
- To understand what makes a balanced diet.
- To know where to find the nutritional information on packaging.
- To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.
- To understand that I should eat a range of different foods from each food group, and roughly how much of each food group.
- To know that nutrients are substances in food that all living things need to make energy, grow and develop.
- To know that 'ingredients' means the items in a mixture or recipe.
- To know that I should only

Rainbow Tart (summer picnic)

- To know that not all fruits and vegetables can be grown in the UK.
- To know that climate affects food growth.
- To know that vegetables and fruit grow in certain seasons.
- To know that cooking instructions are known as a 'recipe'.
- To know that imported food is food which has been brought into the country.
- To know that exported food is food which has been sent to another country..
- To understand that imported foods travel from far away and this can negatively impact the environment.
- To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre.
- To understand that vitamins, minerals and fibre are

Easter Biscuits (1 week)

- To know that the amount of an ingredient in a recipe is known as the 'quantity.'
- To know that it is important to use oven gloves when removing hot food from an oven.
- To know the following cooking techniques: sieving, creaming, rubbing method, cooling.
- To understand the importance of budgeting while planning ingredients for biscuits.


Bolognese (harvest - 1 day)

- To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues.
- To know that I can adapt a recipe to make it healthier by substituting ingredients.
- To know that I can use a nutritional calculator to see how healthy a food option is.
- To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.



3 course meal (harvest or Christmas supper)

- To know that 'flavour' is how a food or drink tastes.
- To know that many countries have 'national dishes' which are recipes associated with that country.
- To know that 'processed food' means food that has been put through multiple changes in a factory.
- To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides.
- To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).

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| | | | | <p>have a maximum of five teaspoons of sugar a day to stay healthy. • To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.</p> | <p>important for energy, growth and maintaining health. • To know safety rules for using, storing and cleaning a knife safely. • To know that similar coloured fruits and vegetables often have similar nutritional benefits.</p> | | | |
| <p>Design</p>  | | | <p><u>Fruit Smoothie (summer picnic)</u></p> <ul style="list-style-type: none"> • Designing smoothie carton packaging by-hand or on ICT software. | <p><u>Healthy Wrap (summer picnic)</u></p> <ul style="list-style-type: none"> • Designing a healthy wrap based on a food combination which works well together. | <p><u>Rainbow Tart (summer picnic)</u></p> <ul style="list-style-type: none"> • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. | <p><u>Easter Biscuits (1 week)</u></p> <ul style="list-style-type: none"> • Designing a biscuit within a given budget, drawing upon previous taste testing judgements. | <p><u>Bolognese (harvest - 1 day)</u></p> <ul style="list-style-type: none"> • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe | <p><u>3 course meal (harvest or Christmas supper)</u></p> <ul style="list-style-type: none"> • Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken. |
| <p>Make</p> | <p>Uses tools for a purpose</p> | | <p><u>Fruit Smoothie (summer picnic)</u></p> <ul style="list-style-type: none"> • Chopping fruit and vegetables safely to make a smoothie. • Identifying if a food is a fruit or a | <p><u>Healthy Wrap (summer picnic)</u></p> <ul style="list-style-type: none"> • Slicing food safely using the bridge or claw grip. • Constructing a | <p><u>Rainbow Tart (summer picnic)</u></p> <ul style="list-style-type: none"> • Knowing how to prepare themselves and a work space to cook safely in, learning the basic | <p><u>Easter Biscuits (1 week)</u></p> <ul style="list-style-type: none"> • Following a baking recipe, from start to finish, including the preparation of ingredients. • | <p><u>Bolognese (harvest - 1 day)</u></p> <ul style="list-style-type: none"> • Cutting and preparing vegetables safely. • Using equipment safely, including knives, | <p><u>3 course meal (harvest or Christmas supper)</u></p> <ul style="list-style-type: none"> • Following a recipe, including using the correct quantities of each |

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| | | | vegetable. • Learning where and how fruits and vegetables grow. | wrap that meets a design brief. | rules to avoid food contamination. • Following the instructions within a recipe. | Cooking safely, following basic hygiene rules. • Adapting a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet). | hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe. | ingredient. • Adapting a recipe based on research. • Working to a given timescale. • Working safely and hygienically with independence. |
| <p>Evaluate</p>  | | | <p><u>Fruit Smoothie (summer picnic)</u></p> <ul style="list-style-type: none"> • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. | <p><u>Healthy Wrap (summer picnic)</u></p> <ul style="list-style-type: none"> • Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. • Evaluating which grip was most effective. | <p><u>Rainbow Tart (summer picnic)</u></p> <ul style="list-style-type: none"> • Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart. | <p><u>Easter Biscuits (1 week)</u></p> <ul style="list-style-type: none"> • Evaluating a recipe, considering: taste, smell, texture and appearance. • Describing the impact of the budget on the selection of ingredients. • Evaluating and comparing a range of food products. • Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins). | <p><u>Bolognese (harvest - 1 day)</u></p> <ul style="list-style-type: none"> • Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups. | |
| <p>Key Vocabulary</p>  | <p>Make Build Test Strong Join</p> | <p>Design Make Evaluate Product Problem Purpose Structures Strong Stiff</p> | <p><u>Windmills</u> Structure Strong Stiff Stable Base Protect Axle Turbine</p> | <p><u>Baby Bear's Chair</u> Natural Made Structure Shape Properties Stable Support Model</p> | <p><u>Cushions</u> Applique Cross stitch Design Equipment Fabric Patch Running stitch Thread</p> | <p><u>Pavilions</u> Design criteria 3D shapes Natural Aesthetic Cladding Reinforce Structure Frame structure</p> | <p><u>Bolognese</u> Beef Cross contamination Diet Ethical issues Farm Healthy Ingredients</p> | <p><u>T-shirt bag</u> Template Join Sustainable Decorative Reinforce Running stitch Cross stitch Blanket stitch</p> |

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| <p><i>Terminology that supports our knowledge and understanding</i></p> | | <p>Stable Join</p> | <p>Template Net Design</p> <p><u>Wheels and axles</u> Axle Wheel Chassis Mechanism Diagram Dowel</p> <p><u>Puppets</u> Fabric Template Joins Staple Glue Safety pin Decorations Stencil</p> <p><u>Story book</u> Design Sliders Adapt Model Assemble Mechanism Design criteria Input Template Test</p> <p><u>Smoothies</u> Fruit Seed Leaf Stem Vegetable Healthy Smoothie Carton Design Flavour</p> | <p>Test</p> <p><u>Moving Monster</u> Axle Input Pivot Mechanical Design criteria Linkage Output Wheel</p> <p><u>Pouches</u> Decorate Fabric Fabric glue Knot Needle Needle threader Running stitch Sew Template Thread</p> <p><u>Wrap</u> Balanced diet Carbohydrate Dairy Fruit Ingredients Oils Sugar Protein Vegetables Design criteria</p> | <p>Seam Texture Knot Client</p> <p><u>Pneumatic Toys</u> Mechanism Pivot Lever Linkage Pneumatic System Input Output Component Thumbnail sketch Research Adapt Properties Reinforce Motion</p> <p><u>Rainbow Tart</u> Client Diet Imported Ingredients Natural Processed Reared Seasonal Seasons</p> <p><u>Trinket boxes</u> Construction Deconstruct Structure Contains Compartment Flap Net Score Fold Join</p> | <p>Function Inspiration Pavilion Reinforce Stable Target audience Target customer Texture Theme</p> <p><u>Automata toys</u> Accurate Assembly diagram Automata Axle Bench hook Cam Clamp Component Cutting list Diagram Dowel Drill bits Exploded diagram Finish Follower Frame Function Hand drill Jelutong Linkage Mark out Measure Mechanism Model Research Right angle Set square Tenon saw</p> <p><u>Torches</u> Design criteria Target audience Theme Equipment</p> | <p>Method Nutrients Packaging Reared Recipe Research Substitute Supermarket Vegan Vegetarian Welfare</p> <p><u>Bridges</u> Abutment Accurate Arched bridge Beam bridge Coping saw Evaluation File Mark out Material properties Measure Predict Reinforce Sandpaper Set square Suspension bridge Tenon saw Test Truss bridge Wood</p> <p><u>Pulleys</u> Pulley Gear Effort Drive belt Gearing up Gearing down Mechanical system Driver Follower Mesh</p> | <p>Applique Decorative Fastening Loop Button Strengthening Measuring Matching colours Contrasting colours</p> <p>3 course meal Accompaniment Collaboration Cookbook Cross-contamination Equipment Flavour Illustration Imperative Ingredients Method Nationality Preparation Processed Reared Recipe Storyboard Target audience</p> <p><u>Steady Hand</u> Game Assemble Battery Battery pack Bulb Bulb holder Buzzer Circuit Circuit symbol Component Copper Fine motor skills Fit for purpose Form</p> |
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| | | | Peel Slice | | | Model Design Sketch Properties Evaluation Test Aesthetics Battery Conductor Electricity Switch LED (Light emitting diode) Bulb Circuit Insulator Component Diagram Input Buzzer Circuit diagram Series circuit Shape Recyclable Assemble Packaging <u>Easter Biscuits</u> Adapt Budget Cooling rack Cream Equipment Evaluation Flavour Ingredients Method Net Packaging Prototype Quantity Recipe Rubbing Sieving Target audience | Motor Spindle <u>Monitoring device</u> Alert Ambient Boolean Consumables Decompose Development Device Duplicate Durable Electronic Inventor Lightweight Manipulate Manoeuvre Plastic Plastic pollution Programming comment Programming loop Reformed Replica Research Sensor Strong Sustainability Synthetic Thermometer Thermoscope Value | Function Gross Motor Skills Insulator LED User <u>Navigate the World</u> 3D CAD Application (apps) Biodegradable Boolean Cardinal compass Client Compass Concept Convince Corrode Duplicate Equipment Feature Finite Function GPS tracker If statement Infinite Investment Lightweight Loop Manufacture Materials Mouldable Navigation Nonrecyclable Product lifestyle Product lifespan Program Recyclable Smart Sustainable Unsustainable Variable Workplace |
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| | | | | | | Unit of measurement Utilities | | |
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Disadvantaged and SEND Pupils

Design Technology often provides a chance for children, who find some curriculum subjects difficult, to shine. Due to the creative, open-ended and practical nature of Design Technology all pupils will be able to access lessons. Appropriate scaffolding will be put in place for children with additional needs, such as introducing vocabulary before lessons, working alongside an adult in order to understand and break down tasks, as well as to stay focused. According to children's individual physical abilities, practical tasks may be adapted, such as pre-cutting a template. Although there is generally very little writing in Design Technology, children will be given a range of ways to express their ideas such as drawing or talking and adults can scribe for children who may find writing in lessons too challenging or time consuming. Design Technology provides excellent opportunities for children to work collaboratively and careful attention will be paid to how children, of varying abilities, are grouped to ensure that there is maximum potential for all children. Lessons provide lots of sensory input with lots of visual stimulus through examining both images and objects and dual coding is used to support understanding of new concepts and vocabulary. New vocabulary can be pre taught to children with language or processing difficulties in order for them to better understand new concepts during teacher input time. Risk assessments are in place and extra attention is paid to health and safety for children with SEND (e.g. children who have little awareness of danger, or physical barriers). Support and considerations for children with SEND is planned into each lesson.

Greater Depth within Design Technology

It is important in **Design Technology** that we create opportunities for all children to demonstrate high ability. In turn we can then identify those who can, or have the potential to, work at a deeper level within the subject. This will enable us to challenge and extend their learning further through purposeful planning, ensuring that the skills of these gifted and talented children are nurtured and developed.

A Greater depth learner in Design Technology will be challenged further in their problem-solving tasks by being asked to consider further specific design criteria. They are also encouraged to evaluate their products in more nuanced ways, for example looking at costing or considering the product for a range of users.

Assessment for and of learning

We recognise that the purpose of assessment is to identify where there is under or over provision for learners so that any problem can be addressed promptly. Therefore teachers have a clear understanding of the expectations for their year group and the relevant milestone; know what good learning looks like during individual lessons and over time; and know that it is their understanding of **how** a pupil completes a task or activity enables the pupil to clearly demonstrate **what** they have learned and their **depth** of learning. When assessing a pupil's achievement in Design Technology for a unit, focus will be on specific aspects of the design cycle, in order to assess pupils' ability in designing (and generating ideas), making and evaluating as these are all distinct skills. Teachers may choose to assess one of these areas most appropriate to the unit.

Pupils' knowledge of structures, mechanical and electrical systems and food and nutrition will also be assessed and the way in which pupils are able to apply this knowledge in the practical making of products. Teachers complete ongoing informal assessments on children's learning that help them to identify gaps in learning which can be addressed promptly. These may be in the form of careful questioning, recall quizzes, mind maps or other tasks.

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End of year expectations in the skills of Design Technology

EYFS

Statutory Early Learning Goal: **Creating with Materials**

- 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.

Children will learn, through play, by using a variety of different construction materials, the basics of building structures and making simple products. Through a process of trial and error they will begin to evaluate their constructions.

Year 1

By the end of Year 1 children will have developed an understanding of Design and Technology as a discrete subject. They will be able to explain what both Design and Technology is and explain how designing and making products are a way to solve problems. They will gain an understanding of the design process. They will use both talking and sharing of ideas, as well as drawing, as a way to design a product. They will gain practice in practical skills of making, including cutting and joining. They will select from a limited range of materials when making products. They will understand that fabric is a type of material and will know some ways to join it without sewing. They will have an understanding that structures need to be strong, stiff and stable and make a structure that is sturdy enough to be free standing. They will understand that a slider and wheels and axles are basic mechanisms that create movement.

Children will understand fruit and vegetables come from plants and how they can be combined to make nutritious meals. They will understand that there are different ways in which food can be processed. They will be able to safely cut soft fruit using the claw method.

Year 2

By the end of year 2 will have a clear understanding of the elements of the design cycle and a deeper grasp of how to evaluate their own and other's products. They will better understand what a client and design brief is and will begin to create their own design criteria for a specific client. They will select from a range of tools and materials to choose the most suitable when making products. They will understand that a lever is a basic mechanism that creates movement and makes work easier. They will know that some structures are designed to support and will know shapes in structures that are best suitable for strength, stability and stiffness. They will be able to join textiles together by sewing running stitches to make a simple product.

Children will make decisions about food combinations considering flavour, texture and nutritional value. They will cut a variety of fruit and vegetables using both bridge and claw method.

Year 3

By the end of year 3 children will be able to evaluate products with greater insight by examining specific elements of the design criteria. They will understand design criteria and briefs and create their own design criteria for a specific client. They will annotate their drawings as a way of communicating design ideas. They will be able to use computer aided design as a way of communicating design ideas and planning a product. They will know what a microbit is and have written a programme for one element.

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They will select from a greater range of tools and materials when making products and to explain why specific materials are most suitable. They will understand that a lever is a basic mechanism that creates movement and makes work easier. They will know that some structures are designed to support and will know shapes in structures that are best suitable for strength, stability and stiffness. They will be able to join textiles together by sewing running stitches and know how to use stuffing to make a simple product.

Children will understand that different fruits and vegetables grow at different times and the impact of this. They will know how to prepare a cooking area for hygiene and make a healthy meal considering not only taste and texture, but also smell and appearance as well as nutritional value. They will be able to follow a simple recipe.

Year 4

By the end of year 4 children will be able to critically evaluate products with insight by examining specific elements of the design criteria. They will use research of existing products to design products that are fit for purpose. They will take into account others' views when evaluating products they have made. They will have a clear understanding of the concepts of function and form. They will select from a wide range of tools and materials when making products and to explain the merits of various materials. They will understand how cams create movement and that a machine consists of mechanisms that make work easier. They will know that there are different types of structures and know how to join parts to create a frame structure that is strong, stiff and stable. They will measure with accuracy and be able to join materials in a variety of ways. They will understand how a simple electric circuit works and be able to design and make a product that uses a bulb and switch.

Children will follow a recipe and consider how to make adaptations based on different tastes and textures, as well as cost of ingredients. They will use techniques of combining and mixing as well as the shaping of biscuits and will use an oven safely. They will evaluate a baked product and be able to make suggestions to improve it.

Year 5

By the end of year 5 children will be able to critically evaluate products with insight by examining specific elements of the design criteria and take into account issues such as environmental impact and cost. They will use research of existing products to design products that are fit for purpose. They will take into account others' views when evaluating products they have made. They will have a clear understanding of the concepts of function and form. They will select from a wide range of tools and materials when making products and to explain the merits of various materials. They will understand how pulleys create movement and that a machine consists of mechanisms that make work easier. They will know that there are different types of structures and that bridges are structures that both support a load and span a gap. They will be confident in creating their own materials out of wood by measuring and cutting. They will join materials together effectively and know how to strengthen structures at joints as well as where the greatest load on the structure will be. They will understand how to use computing to programme a device.

Children will understand where beef comes from and the different types of farming. They will know how to hygienically prepare meat and the dangers of cross contamination. They will know how to amend a recipe to include ingredients to make it more nutritious. They will be able to safely cut a variety of vegetables and follow the different steps of the recipe including using a stove.

Year 6

By the end of year 6 children will be able to design, make and evaluate products with a focus on sustainability. They will use research of existing products to design products that are fit for purpose. They will take into account others' views when evaluating products they have made. They will have a clear understanding of the concepts of function and form. They will select from a wide range of tools and materials when making products and to explain the merits of various materials. They will have a thorough

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understanding of the different types and purposes of structures as well as different mechanisms that create movement and can be used in machines. They will understand how to use computing to programme a device and use CAD to generate designs. They will be able to make an electric circuit with confidence and understanding and include a programmable device into a circuit with a buzzer.

Children will be able to differentiate between traditional meals, including national dishes, and processed foods. They will have a thorough understanding of 'farm to fork' as well as the importance of hygiene and safety when preparing food. They will be able to research different recipes and follow, amend or devise their own recipes. They will be able to use a variety of food preparation and cooking techniques in order to produce a well balanced, tasty and appealing meal consisting of a few different dishes.