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| Design Technology |
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| Mechanics | Textiles | Structures | Electric and digital | Cooking and nutrition |
| Key concepts (Big Ideas) in **Design and Technology** |
| *Pupils will become increasingly competent in designing, making and evaluating products. They will investigate how design has been used to solve problems and create products and structures in the real world, including the techniques used by designers to improve looks and functionality. They will have the opportunity to design their own products in response to design briefs, learn and experiment with a range of techniques before making and evaluating products.* **Each unit of work will be based on the following teaching sequence.** The technical knowledge will be specific to the key concepts outlined below**Mechanics**Icon  Description automatically generatedPupils will gain an understanding of how different mechanisms work, evaluate products with different mechanisms and design and make working products to fit a design brief. They will gain the technical knowledge needed to make different mechanisms work effectively. **Textiles**Shape  Description automatically generated with low confidencePupils will gain the technical knowledge needed to work with textiles such as stitching, sewing and threading. They will study textile designs and how to make products which are practical as well as stylish and then apply this learning to their own designs and products. Logo  Description automatically generated**Structures**Pupils will learn the technical knowledge used by designers to make structures which are strong and stable. They will learn and apply strengthening techniques, explore the benefits of different shapes and materials and apply this to their own designs and products. **Electric and digital**Icon  Description automatically generated with medium confidencePupils will learn how electronics and digital technologies are used when designing and creating products. They will gain the technical knowledge needed to programme devises and to make use of electric circuits including switches to power and control a product. **Cooking and nutrition**Icon  Description automatically generatedPupils will learn where food comes from and how nutritional information can be used to plan a balanced and healthy diet. They will also learn techniques needed to prepare and cook food safely and design dishes and meals for specific purposes.  |

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| **Design Technology Key Concepts Mapping** |
|  | **Autumn 2** | **Spring 2** | **Summer 2**  |
| Year 1/2Cycle A | **Mechanisms:**Fair ground wheel | **Textiles:**Puppets | **Food:**A balanced diet |
| Year 1/2Cycle B | **Structures:** Windmills | **Mechanisms:** Moving story book | **Food:**Fruit and vegetables |
| Year 3/4Cycle A | **Mechanisms:** Pneumatic toys | **Food:** Adapting a recipe | **Structures:** Constructing a castle |
| Year 3/4Cycle B | **Digital world:** Electronic charm | **Electrical systems:** Torches | **Textiles:**Cushions |
| Year 5/6Cycle A | **Structures:**Bridges | **Electrical systems:** Doodlers | **Food:** What could be healthier? |
| Year 5/6Cycle B | **Mechanisms**Pop up books | **Textiles:**Stuffed toys | **Digital world:** Monitoring devices |

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| Knowledge and skills sequencing | **DESIGN AND TECHNOLOGY** |
|  | EYFS | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
| **Mechanics**Icon  Description automatically generatedAppraise and analyseTechnical knowledgePracticeGenerate ideas and designDesign and makeEvaluate |  | To appraise and analyse mechanisms in existing products (moving story book/fairground wheel)To identify how mechanisms work in existing products e.g. sliders/levers and wheels and axels. To be able to make prototype mechanisms. To create a product which includes sliders and levers/wheels and axels.To design using pictures and labels. To evaluate my product against function. | To analyse pneumatic systems in existing products to understand how they are used to create movement.To understand how pneumatic mechanisms work.To produce a mechanical prototype-pneumatic system.To select appropriate materials to produce a mechanical product-pneumatic toy.To design a product which makes use of a pneumatic mechanism.To evaluate my product and identify ways to improve my design.  | To appraise and analyse a range of existing products to identify and explore the different mechanisms used (pop up books) To gain an understanding of how the different mechanisms work and the materials and techniques required. To use a range of materials, tools and equipment to create a prototype, selecting different mechanisms to create the movement required. To use a range of materials, tools and techniques to make a product. To design a product that meets a design brief. To evaluate the end product against the design brief and consider the views of others to improve their work.  |
| **Textiles**Shape  Description automatically generated with low confidenceAppraise and analyseTechnical knowledgePracticeGenerate ideas and designDesign and makeEvaluate |  | To appraise and analyse a selection of puppets. To identify techniques used to create a puppet (stapling, gluing, sewing, threading etc).To practise a range techniques used to make a puppet to create a prototype (stapling, gluing etc).To design a product using pictures and words. To use a range of tools and materials to create a finished product. To evaluate an end product in terms of aesthetics – puppet. | To research a design concept or range of products and appraise them, including the use of different stitches and techniques.To understand how to use different stitches including running stich and cross stitch. To practise skills identified to develop a design of my own.To generate and develop ideas using exploding diagrams to design a product. To be able to think ahead about the order of my work, select tools needed for a given task and give reasons for my choices. To be able to evaluate a finished product against a design brief. | To appraise and analyse an existing product commenting on design features. To understand how pattern pieces are used to make an end product.To experiment with pattern pieces to create a prototype. To design a product using pattern pieces to meet a design brief. To use pattern pieces, appropriate materials and tools to create an end product. To evaluate a product on appearance and function against an original design criteria and justify decisions made in the design and making process. |
|  | EYFS | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
| **Structures**Logo  Description automatically generatedAppraise and analyseTechnical knowledgePracticeGenerate ideas and designDesign and makeEvaluate |  | To appraise and analyse how a structure is made, including strengthening techniques.To understand that the shape of materials can be changed to improve the strength of structures. To practise making stable structures.To design a structure using pictures and words based on a design criteria.To make and join together a stable structure with functioning parts (turbines).To evaluate my structure in terms of design. | To research castle structures and consider how they were designed to defend. To understand the techniques needed to build a model structure, including suitable materials, joining and strengthening techniques. To explore suitable materials to create a strong and stable structure. To generate ideas and design a structure which is strong and stable and includes defensive strategies from research.To use appropriate tools and construction materials to make a structure.To evaluate my structure and suggest ways for improvement. | To analyse structural designs in terms of functionality, aesthetics and materials.To understand different methods of strengthening bridges.To practise a range of structural designs to create bridges which can stand and support weight.To generate ideas and design a structure (bridge) demonstrating my design from different perspectives.To use a range of appropriate tools competently and I can join and combine a range of materials competently.To evaluate a product on appearance and function against an original design criteria and justify decisions made in the design and making process. |
| **Electric and digital**Icon  Description automatically generated with medium confidenceAppraise and analyseTechnical knowledgePracticeGenerate ideas and designDesign and makeEvaluate |  |  |  | **Digital**To research and appraise smart wearables and the impact of the digital revolution in the world of product design. To learn how to write a program in initiate a flashing LED panel.To learn how to use CAD to make a display badge.To design a smart wearable and pouch for an eCharm. To use Micro:bit and CAD to program a flashing LED panel and design a pouch. To evaluate virtual model against the design requirements. | **Digital**To explain what a monitoring device is and how they are used in every day lifeTo learn how to use Makecode to program a monitoring deviceTo learn how to use TinkerCAD to make a prototype for a housing unitTo design a monitoring device and housing unit for a temperature monitor.To use Microbit and TinkerCAD to program a monitoring device and design a housing unitTo evaluate virtual model against own design criteria and consider the views of others to improve their work |
| **Electrical**To appraise and analyse a range of torches and comment on their features. To learn about electrical items and how they workTo learn how a switch controls the flow of an electric currentTo design a torch based on a user profileTo make a torch based on a user profileTo evaluate my torch and identify any improvements that could be made. | **Electrical**To appraise and analyse a range of motorised products to understand how they are used, including a doodler.To create a range of electrical circuits and identify their components, including a motor.To practise using a range of tools and techniques to create part of a product.To generate ideas and design a product that meets the design brief.To use a range of tools and techniques to make a product.To evaluate their ideas and products against their own design criteria and consider the views of their target audience to improve their work |
| **Cooking and nutrition**Icon  Description automatically generatedAppraise and analyseTechnical knowledgePracticeGenerate ideas and designDesign and makeEvaluate |  | To identify where our fruit and vegetables come from and identify foods from different food groups to make a healthy product (smoothie/healthy wrap). To identify different techniques used to prepare and create a healthy product. To practise a range of different techniques to prepare and create a healthy product (mushing, chopping, blending, peeling, grating, spreading, cooking)To design a healthy product using simple drawings and labels including food groups. To use a range of technical knowledge to create a product (mushing, chopping, peeling, grating, spreading, cooking, blending). To evaluate their healthy product in terms of design and taste.  | To appraise and evaluate a range of existing products.To identify techniques used and to write a method to create an existing product.To practise a range of different techniques to prepare and create a seasonal product (grating, chopping, slicing, rolling, folding, pinching, egg washing).To design a seasonal dish using exploded diagrams.To use a wider range of technical skills and tools to create a finished product. To evaluate their finished product against their original design and a design criteria. | To appraise and analyse Bolognese sauces and compare nutritional values. To identify how a range of cooking techniques can be used to create a healthy and balanced dish. To practise a range of different cooking techniques to decide which is the most appropriate. To work collaboratively to design a healthy dish. To competently use a range of tools and cooking methods to prepare a healthy and nutritional sauce. To evaluate their finished product against their original design, a design criteria and consider the views of others. |

