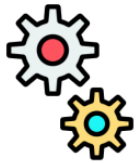
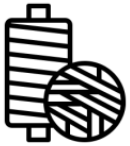
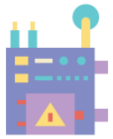
Shortlanesend

Progression Overview – Design technology

Design Technology				
				
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

Pupils 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

Pupils 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.

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.

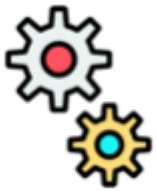
Electric and digital

Pupils 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

Pupils 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.

Knowledge and skills sequencing DESIGN AND TECHNOLOGY

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mechanics  **Appraise and analyse**	**To explore the movement, feel and look of different products.**	**To appraise and analyse mechanisms in existing products (moving story book and match box cars).** **To identify how mechanisms work in existing products e.g. sliders/levers and wheels/axels.** **To be able to make prototype mechanisms.**		**To analyse slingshot and identify how they work.** **To identify how a chassis and launch mechanism works.** **To produce a mechanical prototype – slingshot.** **To design a car with a slingshot mechanism.**		**To appraise and analyse a range of existing products.** **To gain an understanding of how cams and followers work.** **To use a range of materials, tools and techniques to create a prototype – cams and followers.**	

Technical knowledge **Practice** **Generate ideas and design** **Design and make** **Evaluate**		**To design using pictures and labels.** **To create a product which includes sliders and levers / wheels and axels.** **To evaluate my product against function.**		**To select appropriate materials to produce a mechanical product – slingshot car.** **To evaluate my product and identify ways to improve my design.**	**To design a product that meets the design brief.** **To use a range of materials, tools and techniques to make a product.** **To evaluate an end product against a design criteria and consider the views of others to improve their work.**
Textiles  **Appraise and analyse** **Technical knowledge** **Practice** **Generate ideas and design** **Design and make** **Evaluate**	**To explore the textures, feel and look of different media and materials.**	**To appraise and analyse a selection of puppets.** **To identify techniques used to create a product (stapling, gluing etc).** **To practise a range techniques used to make a product 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.**	**To appraise and analyse.** **To identify techniques used to create a product (sewing, threading etc)** **To practise a range of techniques used to used to make a product (sewing, threading etc) PR.** **To design a product using pictures and words based on a design criteria.** **To use a range technical knowledge and skills to create a finished product.** **To evaluate my product in terms of design**	**To research a design concepts or range of products and appraise them.** **To understand how a cross stitch and other sawing designs are created.** **To practise skills identified to develop a design of my own.** **To be able to generate and develop ideas using exploding diagrams to design an end 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.**

Structures  **Appraise and analyse** **Technical knowledge** **Practice** **Generate ideas and design** **Design and make** **Evaluate**	**To explore the movement, feel and look of different structures.** **To respond to a range of media and materials developing an understanding that they manipulate and create effects with these.**	**To appraise and analyse how a structure is made.** **To identify how a net is created using shapes.** **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.** **To evaluate my structure in terms of design.**		**To research structures and consider how these structures work.** **To identify the structure and analyse the support techniques to make the structure strong.** **To explore suitable materials to create a strong structure.** **To generate ideas and design a structure including strengthening techniques.** **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 techniques.** **To practise a range of structural designs to create the structure.** **To generate ideas and design a structure demonstrating my design from different perspectives.** **To use a range of appropriate tools competently and to 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  **Appraise and analyse** **Technical knowledge** **Practice** **Generate ideas and design**				**<u>Digital</u>** **To explain what a monitoring device is and how they are used in every day life.** **To learn how to use Make code to program a monitoring device.** **To learn how to use Tinker CAD to make a prototype.** **To design a monitoring device.** **To use Micro bit and Tinker CAD to program a monitoring device and design a product.** **To evaluate virtual model against the design requirements.** **<u>Electrical</u>** **To appraise and analyse a range of electrical items and comment on their features.**	**<u>Digital</u>** **To appraise and analyse a selection of navigational tools and consider and suggest additional functions for them.** **To know how to use Make code to program a navigational tool To know how to use Tinker CAD to make a prototype for a sustainable case.** **To create a sustainable design of a navigational device and case considering material decisions.** **To use Micro bit and Tinker CAD to create an advanced program for a navigational tool and design a sustainable case.** **To evaluate virtual model against own design criteria and consider the views of others to improve their work.** **<u>Electrical</u>**

Design and make **Evaluate**				**To learn about electrical items and how they work.** **To learn how a switch controls the flow of an electric current.** **To design an electrical device.** **To make a an electrical device.** **To evaluate my electrical device and identify any improvements that could be made.**	**To appraise and analyse a range of electrical devices and identify if the form follows its function.** **To create a range of electrical circuits and identify their components.** **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 others to improve their work.**
Cooking and nutrition  **Appraise and analyse** **Technical knowledge** **Practice** **Generate ideas and design** **Design and make** **Evaluate**	**Cooking & Nutrition To identify healthy foods.**	**To identify where our fruit and vegetables come from to make a healthy product (e.g. smoothie).** **To identify different techniques used to prepare and create a healthy product (mushing, chopping, blending).** **To practise a range of different techniques to prepare and create a healthy product (mushing, chopping, blending).** **To design a product using**	**To identify ingredients from different food groups to create a healthy and balanced product.** **To identify different techniques to prepare a healthy and balanced product (peeling, chopping, grating, spreading, cooking).** **To practise a range of techniques to prepare a balanced product (peeling, chopping, grating, spreading, cooking).**	**To identify seasonal ingredients used in an existing product.** **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 a range of dishes within a three-course meal.** **To identify how the different cooking techniques can be used to create a range of healthy and balanced dishes.** **To practise a range of different cooking techniques to decide which is the most appropriate method.** **To work collaboratively to design a three-course menu.** **To use a range of tools and cooking methods to prepare and make a three-course meal.** **To evaluate their finished product against their original design, a design criteria and consider the views of others.**

		pictures and words. To use a range of technical knowledge and skills to create a finished product (mushing, chopping, blending). To evaluate their healthy product in terms of design and the taste.	To design a healthy, balanced product using simple drawings and labels (food groups). To use a range of technical knowledge to create a finished product (peeling, chopping, grating, spreading, cooking). To evaluate their product against their original design and a design criteria.				
Curriculum subject	**Significance**	**Similarity and differences**	**Cause and consequence**	**Continuity and change**	**Responsibility**	**Communication (Oracy & Written)**	**Enquiry**
D&T	**Significant designers and designs, real world examples of effective and successful products and designs.**	**Making comparisons between products and designs to inform own plans, noting differences, drawing conclusions.**	**Identifying how things work, how an action can cause change or movement/ strengthen.**	**How design has changed over time.**	**Working safely with different materials, responsibilities to customers to ensure quality products, healthy eating.**	**Using correct terminology, evaluating, communicating designs accurately, labelling and annotating, explaining processes, presenting.**	