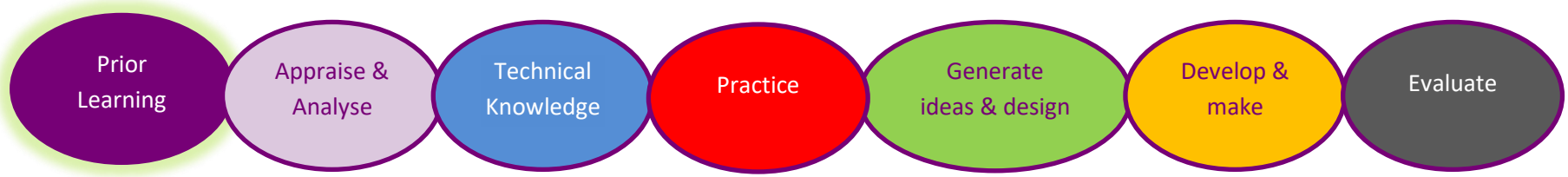
Rokeby Park Primary School Design & Technology Progression

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.

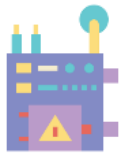
Cooking and nutrition

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	Y1	Y2	Y3	Y4	Y5	Y6
Mechanics  Appraise and analyse Technical knowledge Practice Generate ideas and design Design and make Evaluate		To appraise and analyse mechanisms in existing products (moving cars) To identify how mechanisms work in existing products e.g. wheels/axels To be able to make prototype mechanisms To design using pictures and labels To create a product which includes wheels and axels To evaluate my product against function	To appraise and analyse mechanisms in existing products (moving story book) To identify how mechanisms work in existing products e.g. sliders/levers To be able to make prototype mechanisms 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 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 select appropriate materials to produce a mechanical product – slingshot car To evaluate my product and identify ways to improve my design		To appraise and analyse a range of existing products – automata toys 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 To design a product that meets the design brief – automata toys 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
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Textiles  Appraise and analyse Technical knowledge Practice Generate ideas and design Design and make		To appraise and analyse a selection of puppets To identify techniques used to create a puppet (stapling, gluing 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		and To understand how a cross stitch design is 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		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	

Evaluate		To evaluate an end product in terms of aesthetics – puppet		give reasons for my choices To be able to evaluate a finished product against a design brief		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  Appraise and analyse Technical knowledge Practice Generate ideas and design			To appraise and analyse how a structure is made To identify how a net is created using shapes To practise making stable structures using nets to make a building (Pudding Lane) To design a structure (building) using pictures and words based on a design criteria To make and join together a stable		To research fairground structures (bridges) and consider how these structures work To understand different methods of strengthening bridges To practise a range of structural designs to create bridges To generate ideas and design a structure including strengthening techniques (bridges)		To analyse structural designs in terms of functionality, aesthetics and materials To identify the structure of different air raid shelters and analyse the support techniques to make the structure strong To explore suitable materials to create a strong structure (air raid shelters) To generate ideas and design a structure (air raid shelters)

Design and make Evaluate			structure (building) using nets To evaluate my structure in terms of design		To use appropriate tools and construction materials to make a structure (bridges) To evaluate my structure and suggest ways for improvement		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
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Electric and digital  Appraise and analyse Technical knowledge Practice				**Digital** To explain what a time capsule is and how they inform historians of the future To learn how to use Makecode to program a monitoring device To learn how to use TinkerCAD to make a prototype for a time capsule	**Electrical** To appraise and analyse a range of torches and comment on their features To learn about electrical items and how they work To learn how a switch controls the flow of an electric current	**Digital** To appraise and analyse a selection of wheelchairs and consider and suggest additional functions for them To know how to use Makecode to program a navigational tool To know how to use TinkerCAD to make a prototype for a wheelchair for	**Electrical** To appraise and analyse a range of toys 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

Generate ideas and design Design and make Evaluate				To design a time capsule To use Microbit and TinkerCAD to program a and design a time capsule To evaluate virtual model against the design requirements	To design a torch based on a user profile To make a torch based on a user profile To evaluate my torch and identify any improvements that could be made.	difficult terrain and environments To create a sustainable design of a wheelchair for difficult terrain and environments and considering material decisions To use Microbit and TinkerCAD to create an advanced program for a wheelchair for difficult terrain and environments and design a sustainable case To evaluate virtual model against own design criteria and consider the views of others to improve their work	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

Second Order Concepts

Second order concepts are fundamental knowledge and skills which are transferable across a range of curriculum subjects. For example, we introduce pupils to the concept of 'similarity and difference' early in their education, developing the observational skills and language needed to make comparisons. This is developed and applied as pupils move through the school so they can confidently apply this in all areas of the curriculum by upper Key Stage Two.

A summary of the second order concepts and how they apply to different subjects are provided in the table below.

Curriculum subject	Significance	Similarity and difference	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	