Gilbert Colvin Primary School

D&T Curriculum Map

Threshold Concepts of Design and Technology

Key strands which run throughout the DT scheme of work:	Structures	Mechanisms / Systems	Cooking and Nutrition	Textiles	Electrical Systems	Digital World
Design: Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. **Make:** Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users. **Evaluate:** Critique, evaluate and test their ideas and products and the work of others. **Technical Knowledge**	**KS1** Build structures exploring how they can be made stronger, stiffer and more stable. Recognise areas of weakness through trial and error. **KS2** Continue to develop KS1 exploration skills, through more complex builds such as pavilion and bridge designs. Understand material selection and learn methods to reinforce structures.	**KS1** **Mechanisms** Introduce and explore simple mechanisms, such as sliders, wheels and axles in their designs. Recognise where mechanisms such as these exist in toys and other familiar products. **KS2** **Mechanical Systems** Extend pupils understanding of individual mechanisms, to form part of a functional system, for example: Automata's that use a combination of cams, followers, axles/shaft, cranks and toppers.	**KS1** Learn about the basic rules of a healthy and varied diet to create dishes. Understand where food comes from, for example plants and animals. **KS2** Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods. Understand what is meant by seasonal foods. Know where and how ingredients are sourced.	**KS1** Explore different methods of joining fabrics and experiment to determine the pros and cons of each technique. **KS2** Understand that fabric can be layered for effect, recognising the appearance and technique for different stitch and fastening types, including their: ● Strength. ● Appropriate use. ● Design	***KS2 only**** *Create functional electrical products that use series circuits, incorporating different components such as bulbs, LEDs, switches, buzzers and motors. Consider how the materials used in these products can:* ● *Protect the circuitry.* ● *Reflect light.* ● *Conduct electricity.* ● *Insulate.*	***KS2 only**** *Learn how to develop an electronic product with processing capabilities. Apply Computing principles to program functions within a product including to control and monitor it. Understand how the history and evolution of product design lead to the on-going Digital revolution and the impact it is having in the world today.*

D&T Curriculum Map

Map of Topics

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1		Mechanisms		Cooking and Nutrition	Textiles	
Year 2	Mechanisms	Textiles		Structures	Cooking and Nutrition	
Year 3	Cooking and Nutrition		Mechanical Systems			Textiles
Year 4	Structures		Structures (CAD)		Electrical Systems	Mechanical systems
Year 5	Mechanical Systems			Mechanical Systems		Textiles (Additional -CAD & Textiles)
Year 6	Structures	Electrical Systems (Additional - monitoring and control)				Cooking and Nutrition

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Year 1

Design Make Evaluate Technical Knowledge

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Mechanisms – Levers and sliders Design, make and evaluate a Christmas/winter card (product) to give to a family member (user) to share a message (purpose).		**Textiles- Templates and joining** Design, make and evaluate a puppet (product) for yourself to use (user) to help retell the story (purpose).		**Cooking and Nutrition - Preparing fruit and vegetables.** Create healthy snacks for a picnic for an explorer to take on their travels Design, make and evaluate a healthy snack/picnic (product) for an explorer (user) to take on their adventures (purpose).
Pupils should be taught to:	**Pupils should be taught to:** • Explore and use sliders and levers. • Understand that different mechanisms produce different types of movement. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:**	**Pupils should be taught to:** • Understand how simple 3-D textile products are made, using a template to create two identical shapes. • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:**	**Pupils should be taught to:** • Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. • Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The eatwell plate. • Know and use technical and sensory vocabulary relevant to the project.

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Gilbert Colvin Primary School – Design and Technology Curriculum Map

Year 2

Design **Make** **Evaluate** **Technical Knowledge**

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Mechanisms - Wheels and axels. Design, make and evaluate a toy vehicle (product) for yourself (user) to show your understanding of history. (purpose)	**Textiles - Templates and joining** Design, make and evaluate a Christmas/winter decoration (product) for your classroom/home (user) to decorate the room. (purpose)		**Structures – Free Standing Structure** Design, make and evaluate a structure from the GFL era (product) to display in your classroom (user) to show your understanding of the time. (purpose)		**Cooking and Nutrition Preparing fruit and vegetables.** Design, make and evaluate a snack or smoothie (product) to eat yourself (user) for a day at the seaside. (purpose)
Pupils should be taught to: • Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:** • Understand how simple 3-D textile products are made, using a template to create two identical shapes. • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:**	**Pupils should be taught to:** • Know how to make freestanding structures stronger, stiffer and more stable. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:**	**Pupils should be taught to:** • Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. • Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The eatwell plate. • Know and use technical and sensory vocabulary relevant to the project.

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Year 3

Design **Make** **Evaluate** **Technical Knowledge**

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Cooking and Nutrition - Healthy varied diet Design, make and evaluate a sandwich/wrap (product) for a person with a specific dietary requirement (user) for their school lunch (purpose)		**Mechanical systems - Levers and Linkages** Design, make and evaluate a shaduf (product) for an Egyptian farmer (user) for transporting water (purpose) https://www.thearmstrongps.com/making-an-ancient-egyptian-shaduf/		**Textiles – 2D shape to 3D product** Design, make and evaluate a bag (product) for the thief (user) to hide the diamonds. (purpose)
Pupils should be taught to:	**Pupils should be taught to:** • Know how to use appropriate equipment and utensils to prepare and combine food. • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory Vocabulary appropriately.	**Pupils should be taught to:**	**Pupils should be taught to:** • Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:**	**Pupils should be taught to:** • Know how to strengthen, stiffen and reinforce existing fabrics. • Understand how to securely join two pieces of fabric together. • Understand the need for patterns and seam allowances. • Know and use technical vocabulary relevant to the project.

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Year 4

Design Make Evaluate Technical Knowledge

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Structure - Shell structure Design, make and evaluate a chocolate box (product) for Mr Wonka (user) for a new chocolate bar (purpose).		**Structures: Shell structure (using CAD)** Design, make and evaluate a Roman jewellery box (product) for an Emperor (user) to store his precious items (purpose).	**Electrical systems- simple circuits and switches** Design, make and evaluate a torch for the main character (user) to use on his journey (purpose).		**Mechanical systems – pneumatics** Design, make and evaluate a moving animal or part of an animal (product) for yourself (user) to show the character new skills (purpose).
Pupils should be taught to: • Develop and use knowledge of how to construct strong, stiff shell structures. • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:**	**Pupils should be taught to:** • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. • Develop and use knowledge of how to construct strong, stiff shell structures. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:** • Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. • Apply their understanding of computing to program and control their products. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:**	**Pupils should be taught to:** • Understand and use pneumatic mechanisms. • Know and use technical vocabulary relevant to the project.

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Year 5

Design **Make** **Evaluate** **Technical Knowledge**

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Mechanical Systems -Pulleys and gears Design, make and evaluate a vehicle (product) for yourself (user) to illustrate forces that are in use (purpose).			**Mechanical systems – CAMs** Design, make and evaluate a Victorian toy (product) for a younger family member (user) that uses CAMs for a moving part (purpose).		**Textiles (+Additional Unit CAD) - Combining different fabric shapes** Design, make and evaluate an item of recycled clothing (product) for a fashion model/yourself (user) that is made sustainably (purpose).
Pupils should be taught to: • Understand that mechanical and electrical systems have an input, process and an output. • Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:**	**Pupils should be taught to:**	**Pupils should be taught to:** • Understand that mechanical systems have an input, process and an output. • Understand how cams can be used to produce different types of movement and change the direction of movement. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:**	**Pupils should be taught to:** • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate.

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Year 6

Design **Make** **Evaluate** **Technical Knowledge**

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Structures - Frame Structure Design, make and evaluate an Anderson or Morrison shelter (product) as a model (user) to protect someone during the Blitz (purpose).	**Electrical systems - more complex switches and circuits (+additional Unit programming and monitoring)** Design, make and evaluate a security alarm (product) for a person or building of your choosing (user) to protect a product or location of your choosing (purpose).				**Cooking & Nutrition - Celebrating culture and seasonality (Discuss farm to fork).** Design, make and evaluate a banquet (product) for your classmates (user) to celebrate the end of SATs (purpose).
Pupils should be taught to: • Understand how to strengthen, stiffen and reinforce 3-D frameworks. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:** • Understand and use electrical systems in their products. • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to the project.	**Pupils should be taught to:**	**Pupils should be taught to:**	**Pupils should be taught to:**	**Pupils should be taught to:** • Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary

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National Curriculum Statements:	
Key Stage 1	**Design** • 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 **Make** • 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 **Evaluate** • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria **Technical knowledge** • 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. **Cooking and Nutrition** • use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from.
Key Stage 2	**Design** • 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 **Make** • 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 **Evaluate** • 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 **Technical knowledge** • 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. **Cooking and Nutrition** • understand and apply the principles of a healthy and varied diet

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	• 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.