



Design and Technology

Intent:

At Colyton Primary Academy, we believe that high-quality design and technology lessons should provide children with a real life context for learning. We want to prepare children to deal with an ever-changing technological world, encouraging them to become creative and resourceful problem solvers, working both independently and as members of a team. We will teach them to be inspired by real world opportunities and relevant problems, identifying needs and developing a range of ideas and solutions in a variety of contexts. Through the DT curriculum, children should be inspired by engineers, designers, chefs and architects to enable them to create a range of structures, mechanisms, textiles, electrical systems and food products with a real life purpose.

Through relevant and exciting units of work, DT should follow the design, make and evaluate cycle. Each of these steps should be rooted in technical knowledge and vocabulary. DT should be taught to a high standard, where each of the stages should be given equal weight. The children's learning and knowledge should build upon previous learning and they should apply this learning to other areas. Children will learn about a variety of inspirational and influential people from the world of design and engineering.

The DT teaching and learning will show a clear progression across the key stages.

For pupils with additional needs, there will be every opportunity to work towards the overall objectives of the year group. Pupils may be supported with their design and technology learning through differentiated questioning, pre-teaching of key vocabulary, adapted work or additional time. All pupils will be able to access the trips and visitors that enrich this subject, and high expectations will challenge all children to meet their personal targets.



National Curriculum Aims for Design and Technology:

The National Curriculum for design and Technology aims to ensure that all pupils:

- ♣ develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- ♣ 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
- ♣ critique, evaluate and test their ideas and products and the work of others
- ♣ understand and apply the principles of nutrition and learn how to cook.

Implementation:



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EYFS:

In the EYFS children follow the Statutory Framework for the early years foundation stage. Within this there are seven areas of learning and development that must shape educational programmes in early years settings. All areas of learning and development are important and inter-connected.

ELG & Development Matters: The Colyton Curriculum

Our EYFS Colyton curriculum takes the ELG & Development matters to create a highly ambitious and bespoke curriculum with a focus on developing high language skills and for children to become competent readers, writers and mathematicians. DT at Colyton begins here, in the EYFS. Children are 'Dynamic Designers'. To be successful designers they also master skills by being an 'Independent Individual', 'Confident Communicator' and 'Magnificent Mathematician'

Children have access to a variety of resources within their continuous provision that helps to both develop and consolidate knowledge, skills and understanding when designing and making within their own play.

Construction area: Children have access to a wide variety of construction kits where they can build, join, stack, balance and adapt their own constructions.

Creation Station: children have the opportunity to use a variety of tools and techniques and processes and select and combine using a variety of materials.

Fine motor skills: We use tools and techniques used for design and technology such as scissors, punches, threading, sewing, hammering to develop those all important fine motor skills.

Large loose parts construction: Outside the children have access to a wide variety of large scale resources such as, crates, drain pipes, tubes & planks giving them the opportunity to design make, adapt, problem solve, modify and put structures to the test together alongside their peers.

Regular cooking opportunities: The children are regularly given the opportunity to explore and make with food.

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These are our ELGs for our EYFS child

Dynamic Designer

- I can safely use a variety of materials, tools and techniques.
- I can experiment with colour design, texture, form and function.
- I can share my creations and explain what I have done.
- I can make use of props and materials when playing characters in narratives and stories.
- I can use different artistic effects to express my ideas and feelings.
- I can build on my learning and improve my ideas and how I represent them.
- I can create things with others by sharing ideas, resources and skills.

Independent Individual

- I can think and talk about my feelings and the feelings of others and begin to manage my own feelings.
- I can set and work towards simple goals.
- I can wait for things I want and control my impulses.
- I can focus on what the teachers says, respond and follow instructions with several parts.
- I can be confident in new activities, be independent and show resilience and perseverance in the face of challenge.
- I know right from wrong and can explain why we have rules.
- I can manage my own personal hygiene and needs.
- I can talk about how to be healthy and have good wellbeing.
- I can see myself as a valuable individual.

Confident Communicator

- I can listen carefully and know why listening is important.
- I can respond with questions, comments and actions.
- I can make comments and ask questions to find out more and to check I understand what has been said to me.
- I can hold two-way conversation with my friends and teachers.
- I can have one to one, small group and class discussions speaking and listening in turn and using new vocabulary.
- I can talk to help work out problems and to explain how things work and why they might happen.
- I can talk about my ideas, feelings and experiences in well-formed sentences and can connect one idea or action to another using a range of connectives and different tenses
- I can learn and use new vocabulary and use it in different ways.
- I can develop social phrases.
- I can describe events in some detail.

Talented Tool User

- I can hold a pencil using the tripod grip.
- I can use lots of tools safely and confidently like pencils, scissors and cutlery.
- I can begin to show accuracy and care in my drawings.
- I can make my handwriting fast, accurate and efficient.

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Long Term Overview

DT	Autumn	Spring	Summer
½ A	Design, make and evaluate products with a clear purpose and intended user		
	<u>Mechanisms</u> <u>Wheels and axles</u> <u>(Moon Buggy)</u>	<u>Structures</u> <u>Freestanding Structures</u> <u>(Tudor Houses)</u>	<u>Food through time</u> <u>Healthy and varied diet</u> -
	Attaching	Joins and templates	Measure and weigh
½ B	Design and make products that have a clear purpose		
	<u>Food</u> <u>Preparing Fruit and</u> <u>Vegetables</u>	<u>Joining Materials</u> <u>Textiles</u>	<u>Mechanisms</u> <u>Sliders and Levers - Moving</u> <u>Story Books</u>
	Skills focus: Cutting	Joining techniques	Templates and cutting
¾ A	Investigate existing objects to help design own products		
	<u>Structures</u> <u>Shell structures - Design/</u> <u>Computer aided design</u> <u>(roundhouse)</u>	<u>Textiles</u> <u>2D shape to 3D product</u>	<u>Electrical Systems</u> <u>Circuits/ switches</u>
	Planning and cutting	Measure, plan and make	Create circuits
¾ B	Produce, experiment and choose from a variety of designs		
	<u>Food</u> <u>Apply principles of a healthy</u> <u>and varied diet</u>	<u>Mechanisms</u> <u>Levers and Linkages</u> -	<u>Mechanisms - pneumatics</u>
	Measure and prepare	Using measures	Assemble and prepare
5/6 A	Research, design and explore ideas to create products for a clear use		
	<u>Structures</u> <u>Frame Structures</u>	<u>Food</u> <u>Create and follow recipes</u> <u>Using Oven/ Hob</u>	<u>Mechanisms</u> <u>Pulleys or gears</u>
	Precision, planning and assembly	Combining ingredients	Understand and use
5/6 B	Design, create , evaluate and improve products		
	<u>Electrical Systems</u> <u>Complex switches and</u> <u>circuits</u>	<u>Mechanisms – Cams</u>	<u>Textiles</u> <u>Combining fabric</u>
	ICT control	Measure, make and plan	Temporary/permanent

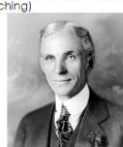
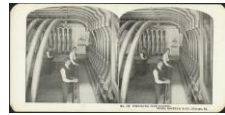
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Personal Development

We study influential people as part of our Colyton history curriculum. This enhances the national curriculum for our students and makes our curriculum unique. These are simply guides below as we also allow child-led learning within the unit so that

These are the influential people we study along with each unit. By studying their lives and achievements we can learn about diversity, equality, sustainability and British Values.

	Autumn	Spring	Summer
Year ½ A	Food: Preparing fruit and vegetables-cutting  Chef: Nadiya Hussain	Structures: Joins and templates  Inventor of playground equipment: Charles Wicksteed	Food through time: Measure and weigh  Chef: Omar McQueen
Year ½ B	Mechanisms: Wheels and axles (attaching)  Founder of the Ford motor car company: Henry Ford	Textiles: Joining materials and techniques  Inventor of the safety Jacket: Bob Switzer, 1930	Mechanisms: Sliders and levers  Inventor of interactive pop up books: Robert Sabuda
Year ¾ A	Structures: Shell structures: Planning and cutting.  Inventor of the folding carton: Robert Gair	Textiles: 2D and 3D product: measure, plan and make.  Inventor of the Velcro: George de Mestral	Electrical systems: Circuits and switches  Inventor of the lightbulb: Thomas Edison Inventor of the filament: Lewis Latimer
Year ¾ B	Food: Apply principles of a healthy and varied diet: Measure and prepare  Founders of the Subway branch: Fred de Luca and Peter Buck	Mechanisms: Levers and linkages  Inventor of the windscreen wiper: Mary Anderson	Mechanisms – pneumatics  Samuel Ingersoll – Inventor of Pneumatic drills
Year 5/6 A	Structures: Frame structures  Structural and civil engineer and businesswoman: Sarah Buck	Food: Create and follow recipes  Chef: Italian (pasta) Gennaro Contaldo	Mechanisms: Pulleys or gears  Architect: Tom Kundig
Year 5/6 B	Electrical systems: Complex switches and circuits  Designer of the home security system: Mary Van Brittan Brown	Mechanisms – Cams  Charles Chubb – inventor of lock	Combining Fabrics  Stella McCartney

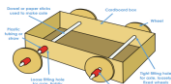
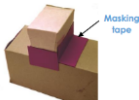
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Knowledge and Skills Progression (By year and unit)

Year ½ A

Mechanisms – Moon Buggies	Structure – Tudor Houses	Food – Smoothies/Fruit Sticks
Wheels and Axles (Autumn) 	Freestanding Structures (Spring) 	Preparing Fruit and Vegetables (Summer) 
NATIONAL CURRICULUM COVERAGE: - KS1 Technical Knowledge: Explore and use mechanisms (eg wheels and axles) in their products. - KS1 Make: Select from and use a range of tools and equipment for practical tasks (eg shaping, finishing).	NATIONAL CURRICULUM COVERAGE: -KS1 Technical Knowledge: Build structures, exploring how they can be made stronger, stiffer and more stable - KS1 Make: Select from and use wide range of construction materials, according to their characteristics.	NATIONAL CURRICULUM COVERAGE: - KS1 Cooking and nutrition: Use the basic principles of a healthy and varied diet to prepare dishes. - KS1 Make: Select from and use wide range of ingredients, according to their characteristics.
SUBSTANTIVE KNOWLEDGE: I CAN explore and use wheels, axles and axle holders. I KNOW the difference between fixed and freely moving axles. I CAN select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.	SUBSTANTIVE KNOWLEDGE: I KNOW HOW TO make freestanding structures stronger, stiffer and more stable. I CAN select new and reclaimed materials and construction kits to build their structures. I CAN use simple finishing techniques suitable for the structure they are creating.	SUBSTANTIVE KNOWLEDGE: I KNOW and use basic principles of a healthy diet to prepare dishes, including how fruit and vegetables are part of The eatwell plate. I CAN use simple utensils and equipment to e.g. peel, grate, chop. I CAN select from a range of fruit and vegetables according to their characteristics e.g. texture to create a chosen product.
DISCIPLINARY KNOWLEDGE: I CAN develop and communicate ideas through drawings, templates and mock-ups (using ICT where appropriate). I CAN explore and evaluate a range of products with wheels and axles.	DISCIPLINARY KNOWLEDGE: I CAN generate ideas based on simple design criteria and my own experiences, explaining what I could make. I CAN evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.	DISCIPLINARY KNOWLEDGE: I CAN generate initial ideas and design criteria through investigating a variety of fruit and vegetables. I CAN evaluate ideas and finished products against design criteria, including intended user and purpose.
DESIGNER/INVENTOR/CHEF Inventor of the Ford Motor Car company: Henry Ford	DESIGNER/INVENTOR/CHEF Architect Charles Wicksteed Christopher Wren	DESIGNER/INVENTOR/CHEF Chef: Omari Mcqueen

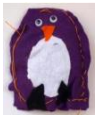
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[Knowledge and Skills Progression \(By year and unit\)](#)

[Year ½ B](#)

Textiles - Puppets	Mechanisms – Story Books	Food – Summer Fruits Salad
Templates and Joining (Autumn) 	Sliders and Levers (Spring) 	Preparing fruit and vegetables (Summer 2) 
NATIONAL CURRICULUM COVERAGE: -KS1 Make: Select from and use a range of tools and equipment for practical tasks (eg cutting, joining). -KS1 Make: Select from and use wide range of textiles, according to their characteristics.	NATIONAL CURRICULUM COVERAGE: - KS1 Technical Knowledge: Explore and use mechanisms (eg levers and sliders) in their products.	NATIONAL CURRICULUM COVERAGE: - KS1 Cooking and Nutrition: Understand where food comes from.
SUBSTANTIVE KNOWLEDGE: I KNOW how simple 3-D textile products are made, using a template to create two identical shapes. I CAN select from and use textiles according to their characteristics. I KNOW HOW TO join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. I CAN explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons.	SUBSTANTIVE KNOWLEDGE: I CAN explore and use sliders and levers. I KNOW that different mechanisms produce different types of movement. I CAN select and use tools, explaining their choices, to cut, shape and join paper and card. I CAN use simple finishing techniques suitable for the product I am creating.	SUBSTANTIVE KNOWLEDGE: I KNOW where a range of fruit and vegetables come from e.g. farmed or grown at home. I CAN use simple utensils and equipment to e.g. cut, slice, squeeze safely. I CAN select from a range of fruit and vegetables according to their characteristics e.g. colour, taste to create a chosen product.
DISCIPLINARY KNOWLEDGE: I CAN design a functional and appealing product for a chosen user and purpose based on simple design criteria. I CAN evaluate my ideas throughout and my final product against the original design criteria.	DISCIPLINARY KNOWLEDGE: I CAN develop, model and communicate my ideas through drawings and mock-ups with card and paper. I CAN plan by suggesting what to do next. I CAN explore a range of existing books and everyday products that use simple sliders and levers.	DISCIPLINARY KNOWLEDGE: I CAN communicate my ideas through talk and drawings. I CAN taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.
DESIGNER/INVENTOR/CHEF Inventor of the safety jacket (1930): Bob Switzer	DESIGNER/INVENTOR/CHEF Designer of interactive pop up books: Robert Sabuda	DESIGNER/INVENTOR/CHEF Chef: Nadiya Hussain

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[Knowledge and Skills Progression \(By year and unit\)](#)

[Year 3/4 A](#)

Structure – Making and Igloo	Textiles	Mechanisms - Nightlights
Shell structures (Autumn) 	2D shape to 3D product (Spring) 	Simple circuits/ switches/programming (Summer) 
NATIONAL CURRICULUM COVERAGE: - KS2 Make: Select from and use a wider range of tools and equipment to perform practical tasks accurately (eg for cutting, shaping, joining and finishing)	NATIONAL CURRICULUM COVERAGE: - KS2 Make: Select from wider range of textiles, according to their functional properties and aesthetic qualities.	NATIONAL CURRICULUM COVERAGE: - KS2 Technical Knowledge: Understand and use electrical systems in their products (eg series circuits with switches, bulbs and buzzers)
SUBSTANTIVE KNOWLEDGE: I CAN use knowledge of nets of cubes and cuboids and some more complex 3D shapes. I KNOW how to construct strong, stiff shell structures. I CAN select and use appropriate tools and software to measure, mark out, cut, score, shape and assemble with some accuracy. I CAN use computer-generated finishing techniques suitable for the product I am creating.	SUBSTANTIVE KNOWLEDGE: I KNOW HOW TO strengthen, stiffen and reinforce existing fabrics. I KNOW HOW TO securely join two pieces of fabric together. I UNDERSTAND the need for patterns and seam allowances. I CAN select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.	SUBSTANTIVE KNOWLEDGE: I UNDERSTAND and use electrical systems in products, such as series circuits incorporating switches, bulbs and buzzers. I CAN apply my understanding of computing to program and control my products. I KNOW how inventors and individuals in the Industrial Revolution helped shape the world.
DISCIPLINARY KNOWLEDGE: I CAN develop ideas through the analysis of existing shell structures and use computer-aided design to model and communicate ideas. I CAN explain my choice of materials according to functional properties and aesthetic qualities.	DISCIPLINARY KNOWLEDGE: I CAN produce annotated sketches, prototypes, final product sketches and pattern pieces. I CAN test my product against the original design criteria and with the intended user.	DISCIPLINARY KNOWLEDGE: I CAN gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. I CAN evaluate ideas and products against my design criteria and identify the strengths and areas for improvement in my work.
DESIGNER/INVENTOR/CHEF Inventor of the folding carton: Robert Gair	DESIGNER/INVENTOR/CHEF Inventor of sewing machine: Elias Howe	DESIGNER/INVENTOR/CHEF Inventor of the lightbulb: Thomas Edison Inventor of the filament: Lewis Latimer

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Food – Food of Europe	Mechanisms – Moving Books	Mechanisms – River Scenes
Healthy & Varied Diet (Autumn) 	Levers and Linkages (Spring) 	Pneumatics (Summer) 
NATIONAL CURRICULUM COVERAGE: - KS2 Cooking and nutrition: Understand and apply the principles of a healthy and varied diet. - KS2 Make: Select from wider range of ingredients according to their functional properties and aesthetic qualities.	NATIONAL CURRICULUM COVERAGE: - KS2 Technical Knowledge: Understand and use mechanical systems in their products (eg levers and linkages)	NATIONAL CURRICULUM COVERAGE: - KS2 Technical Knowledge: Understand and use mechanical systems in their products.
SUBSTANTIVE KNOWLEDGE: I KNOW HOW TO use appropriate equipment and utensils to prepare and combine food. I KNOW about a range of fresh and processed ingredients, and whether they are grown, reared or caught. I CAN plan the main stages of a recipe, listing ingredients, utensils and equipment. I CAN select and use appropriate utensils and equipment to prepare and combine ingredients.	SUBSTANTIVE KNOWLEDGE: I UNDERSTAND and use lever and linkage mechanisms. I CAN distinguish between fixed and loose pivots. I CAN select from and use appropriate tools with some accuracy to cut, shape and join paper and card. I CAN select from and use finishing techniques suitable for my product.	SUBSTANTIVE KNOWLEDGE: I UNDERSTAND and can use pneumatic mechanisms. I CAN select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons.
DISCIPLINARY KNOWLEDGE: I CAN generate design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. I CAN carry out sensory evaluations of a variety of ingredients/products and record the evaluations using e.g. tables and simple graphs.	DISCIPLINARY KNOWLEDGE: I CAN use annotated sketches and prototypes to develop, model and communicate ideas. I CAN investigate and analyse books and, where available, other products with lever and linkage mechanisms.	DISCIPLINARY KNOWLEDGE: I KNOW HOW TO use annotated sketches and prototypes to develop, model and communicate ideas. I CAN order the main stages of making. I CAN evaluate my own products and ideas against criteria.
DESIGNER/INVENTOR/CHEF Chef: Thomas and Ellen Warburton	DESIGNER/INVENTOR/CHEF Designer of pop-up and moving books: Jan Pieńkowski	DESIGNER/INVENTOR/CHEF Inventor of the pneumatic drill: Samuel Ingersoll

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[Knowledge and Skills Progression \(By year and unit\)](#) [Year 5/6 A](#)

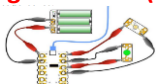
Structure – Anderson Shelters	Food – Salsa! Salsa!	Mechanisms – Fairground
Frame Structures (Autumn) 	Culture & Seasonality (Spring) 	Pulleys and Gears (Summer) 
NATIONAL CURRICULUM COVERAGE: - KS2 Technical Knowledge: Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. - KS2 Make: Select from wider range of construction materials according to functional properties and aesthetic qualities.	NATIONAL CURRICULUM COVERAGE: - KS2 Cooking and nutrition: 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.	NATIONAL CURRICULUM COVERAGE: - KS2 Technical Knowledge: Understand and use mechanical systems in their products (eg gears and pulleys)
SUBSTANTIVE KNOWLEDGE: I KNOW HOW TO strengthen, stiffen and reinforce 3-D frameworks. I CAN accurately measure, mark out, cut, shape and join construction materials to make frameworks. I CAN use finishing and decorative techniques suitable for the product.	SUBSTANTIVE KNOWLEDGE: I KNOW HOW TO use utensils and equipment including heat sources to prepare and cook food. I KNOW about seasonality in relation to food products and the source of different food products. I CAN make, decorate and present the food product appropriately for the intended user and purpose.	SUBSTANTIVE KNOWLEDGE: I KNOW that mechanical systems have an input, process and an output. I KNOW how gears and pulleys can be used to speed up, slow down or change the direction of movement. I KNOW how Archimedes' discoveries with pulleys helped to shape the world.
DISCIPLINARY KNOWLEDGE: I CAN generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. I CAN formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. I CAN critically evaluate their products against the design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.	DISCIPLINARY KNOWLEDGE: I CAN explore a range of initial ideas, and make design decisions to develop a final product linked to user & purpose. I CAN carry out sensory evaluations of a range of relevant products and ingredients, and record the evaluations using e.g. tables/graphs/charts such as star diagrams.	DISCIPLINARY KNOWLEDGE: I CAN develop and communicate ideas through discussion, annotated drawings, exploded drawings and cross-sectional diagrams. I CAN select from and use a range of tools and equipment to make products that are well assembled and well finished. I CAN test products with intended user; evaluate the quality of the design, manufacture, functionality and fitness for purpose.
DESIGNER/INVENTOR/CHEF Designers of Anderson shelter: William Paterson and Oscar Carl Kerrison	DESIGNER/INVENTOR/CHEF Chef: Alice Waters	DESIGNER/INVENTOR/CHEF Inventors of pulley systems for lifts: Archimedes

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Mechanisms – Earthquake Alarms	Mechanisms	Textiles
Monitoring & Control (Autumn) 	Cams (Spring 2) 	Combining Fabric Shapes (Summer) 
NATIONAL CURRICULUM COVERAGE: - KS2 Technical Knowledge: Apply their understanding of computing to program, monitor and control their products.	NATIONAL CURRICULUM COVERAGE: - KS2 Technical Knowledge: Understand and use mechanical systems in their products (eg cams)	NATIONAL CURRICULUM COVERAGE: - KS2 Make: Select wider range of tools and equipment to cut, shape, join and finish accurately.
SUBSTANTIVE KNOWLEDGE: I UNDERSTAND and use electrical systems in my products. I CAN use computer control systems in a product. I CAN select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. I CAN create and modify a computer control program to enable an electrical product to respond to changes in the environment.	SUBSTANTIVE KNOWLEDGE: I KNOW that mechanical systems have an input, process and an output. I KNOW how cams can be used to produce different types of movement and change the direction of movement.	SUBSTANTIVE KNOWLEDGE: I CAN make a 3-D textile product from a combination of accurately made pattern pieces, fabric shapes and different fabrics. I KNOW how to strengthen, stiffen and reinforce fabrics where appropriate.
DISCIPLINARY KNOWLEDGE: I CAN develop a design specification for a functional product that responds automatically to changes in the environment. I CAN test the system to demonstrate its effectiveness for the intended user and purpose.	DISCIPLINARY KNOWLEDGE: I CAN develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. I CAN produce detailed lists of tools, equipment and materials and formulate step-by-step plans. I CAN consider the views of others to improve my work.	DISCIPLINARY KNOWLEDGE: I CAN design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. I CAN test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.
DESIGNER/INVENTOR/CHEF Designer of the home security system: Mary Van Brittan Brown	DESIGNER/INVENTOR/CHEF Inventor of the Chubb lock: Charles Chubb	DESIGNER/INVENTOR/CHEF Designer: Stella McCartney

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Skills Progression by Area - DESIGNING

EYFS	Year 1/2	Year 3/4	Year 5/6
Design products for a specific person or reason, including using story contexts (eg a new bed for Baby Bear). Talk about what they are planning to make with adults and peers.	Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment. State what products they are designing and making. Say whether their products are for themselves or other users. Describe what their products are for. Say how their products will work. Say how they will make their products suitable for their intended users. Use simple design criteria to help develop their ideas. Generate ideas by drawing on their own experiences. Use knowledge of existing products to help come up with ideas. Develop and communicate ideas by talking and drawing. Model ideas by exploring materials, components and construction kits and by making templates and mock-ups. Use information and communication technology, where appropriate, to develop and communicate their ideas.	Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. Describe the purpose of their products. Explain how particular parts of their products work. Gather information about the needs and wants of particular individuals and groups. Develop their own design criteria and use these to inform their ideas. Generate realistic ideas, focusing on the needs of the user. Make design decisions that take account of the availability of resources. Share and clarify ideas through discussion. Model their ideas using prototypes and pattern pieces.	Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. Carry out research, using surveys, interviews, questionnaires and web-based resources. Identify the needs, wants, preferences and values of particular individuals and groups. Develop a simple design specification to guide their thinking. Indicate the design features of their products that will appeal to intended users. Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas. Use computer-aided design to develop and communicate their ideas. Generate innovative ideas, drawing on research. Make design decisions, taking account of constraints such as time, resources and cost.

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Skills Progression by Area - MAKING

EYFS	Year 1/2	Year 3/4	Year 5/6
Cut, shape and join using scissors, glue, paper fasteners, hole punches and masking tape. Explore and use different fabric. Cut and join fabrics with simple techniques.	Plan by suggesting what to do next. Select from a range of tools and equipment, explaining their choices. Select from a range of materials and components according to their characteristics. Follow procedures for safety and hygiene. Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components. Measure, mark out, cut and shape materials and components. Assemble, join and combine materials and components. Use finishing techniques, including those from art and design.	Select tools and equipment suitable for the task. Explain their choice of tools and equipment in relation to the skills and techniques they will be using. Order the main stages of making. Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. Measure, mark out, cut and shape materials and components with some accuracy. Assemble, join and combine materials and components with some accuracy. Apply a range of finishing techniques, including those from art and design, with some accuracy.	Select materials and components suitable for the task. Explain their choice of materials and components according to functional properties and aesthetic qualities. Produce appropriate lists of tools, equipment and materials that they need. Formulate step-by-step plans as a guide to making. Use a wider range of materials and components than Lower KS2, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. Accurately measure, mark out, cut and shape materials and components. Accurately assemble, join and combine materials and components. Accurately apply a range of finishing techniques, including those from art and design. Use techniques that involve a number of steps. Demonstrate resourcefulness when tackling practical problems.

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[Skills Progression by Area - EVALUATING](#)

EYFS	Year 1/2	Year 3/4	Year 5/6
Talk about what they like and are proud of in their products. Evaluate whether the product is fit for the intended user or purpose (including within a story context).	Talk about their design ideas and what they are making. Make simple judgements about their products and ideas against design criteria. Suggest how their products could be improved. In exploring existing products, children explore: - what and who products are for - how products work - how and where products might be used - what materials products are made from - what they like and dislike about the products	Identify the strengths and areas for development in their ideas and products. Refer to their design criteria as they design and make. Use their design criteria to evaluate their completed products. In exploring existing products, children explore: - how well products have been designed and made - why materials have been chosen and what methods of construction have been used - who designed and made the products - where and when products were designed and made - whether products can be recycled or reused Know about inventors, designers, engineers, chefs and manufacturers who have developed groundbreaking products	Consider the views of others, including intended users, to improve their work. Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. Evaluate their ideas and products against their original design specification. In exploring existing products, children explore: - how well products work - how well products achieve their purposes - how well products meet user needs and wants - how much products cost to make - how innovative products are - how sustainable the materials in products are - what impact products have beyond their intended purpose Know about inventors, designers, engineers, chefs and manufacturers who have developed groundbreaking products

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Skills Progression by Area - TECHNICAL KNOWLEDGE

EYFS	Year 1/2	Year 3/4	Year 5/6
Know how to use paper and card to make simple flaps and hinges.	Know about the simple working characteristics of materials and components.	Know how to use learning from science and mathematics to help design and make products that work.	Know that materials can be combined and mixed to create more useful characteristics.
Know how to use construction kits (eg Lego, Duplo) to build walls and towers.	Know about the movement of simple mechanisms such as levers, sliders, wheels and axles.	Know that materials have both functional properties and aesthetic qualities.	Know that mechanical and electrical systems have an input, process and output.
Know different methods for joining card and paper.	Know how freestanding structures can be made stronger, stiffer and more stable.	Know the correct technical vocabulary for the projects they are undertaking.	Know the correct technical vocabulary for the projects they are undertaking.
Know how to use construction kits (eg Duplo, mobilo) to assemble vehicles with moving wheels.	Know that a 3-D textiles product can be assembled from two identical fabric shapes.	Know how mechanical systems such as levers and linkages or pneumatic systems create movement.	Know how mechanical systems such as cams or pulleys or gears create movement.
	Know that food ingredients should be combined according to their sensory characteristics.	Know how simple electrical circuits and components can be used to create functional products.	Know how more complex electrical circuits and components can be used to create functional products.
	Know the correct technical vocabulary for the projects they are undertaking	Know how to program a computer to control their products.	Know how to program a computer to monitor changes in the environment and control their products.
		Know how to make strong, stiff shell structures.	Know how to reinforce and strengthen a 3D framework.
		Know that a single fabric shape can be used to make a 3D textiles product.	Know that a 3D textiles product can be made from a combination of fabric shapes.
		Know that food ingredients can be fresh, pre-cooked and processed.	Know that a recipe can be adapted by adding or substituting one or more ingredients.

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Skills Progression by Area - COOKING AND NUTRITION

EYFS	Year 1/2	Year 3/4	Year 5/6
Take part in sensory activities with fruit and vegetables, ie involving appearance, taste and smell. Cut soft fruit and vegetables using appropriate utensils.	Know that all food comes from plants or animals. Know that food has to be farmed, grown elsewhere (e.g. home) or caught. Know how to name and sort foods into the five groups in the Eatwell Guide. Know that everyone should eat at least five portions of fruit and vegetables every day. Know how to prepare simple dishes safely and hygienically, without using a heat source. Know how to use techniques such as cutting, peeling and grating.	Know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the Eatwell Guide. Know that to be active and healthy, food and drink are needed to provide energy for the body.	Know that a recipe can be adapted a by adding or substituting one or more ingredients. Know that seasons may affect the food available. Know how food is processed into ingredients that can be eaten or used in cooking. Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. Know that recipes can be adapted to change the appearance, taste, texture and aroma. Know that different food and drink contain different substances – nutrients, water and fibre – that are needed for health.

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Lesson Design

The Colyton long term programme and progression plan for DT is based on the Design and Technology Association's Projects on a Page. It is up to class teachers to assess on an individual or school basis if the resources or tasks might best be adapted to suit the needs of specific classes, and they are encouraged to discuss this with the DT subject leader to ensure the integrity of the progression plan is not affected.

In planning sequences of learning, teachers use the 3S definition: designing and making **Something** for **Somebody** for **Some** purpose. Alongside this, our DT curriculum follows the following principles:

USER: Pupils should have a clear idea of who they are designing and making products for, considering their needs, wants, values, interests and preferences. The intended users could be themselves or others, an imaginary or story-based character, a client, a consumer or a specific target group.

PURPOSE: Pupils should be able to clearly communicate the purpose of the products they are designing and making. Each product they create should be designed to perform one or more defined tasks. Pupils' products should be evaluated through use.

FUNCTIONALITY: Pupils should design and make products that work/function effectively in order to fulfil users' needs, wants and purposes. In D&T, it is insufficient for children to design and make products which are purely aesthetic.

DESIGN DECISIONS: Pupils need opportunities to make their own design decisions. Making design decisions allows pupils to demonstrate their creative, technical and practical expertise, and use learning from other subjects. When making design decisions pupils decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for.

INNOVATION: When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging open-ended starting points for learning.

AUTHENTICITY: Pupils should design and make products that are believable, real and meaningful to themselves and others.

Across a sequence of learning, children complete a mixture of Investigative and Evaluative Activities (IEAs), Focused Tasks and a Design, Make and Evaluative Assignment. These support children to build knowledge and skills in line with the principles above.

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Inclusion - Inclusion in DT means: everyone feeling they can be successful, opportunities to explore their creativity from their own starting points, supporting language and communication for all learners

Possible struggle or challenge	Scaffold or support to consider
- Difficulties with language/vocabulary	- Clarify technical terms that have different meanings in other contexts, for example 'knead'/'need', 'grain', 'glaze', 'form', 'saw', 'seam', etc. Labels placed around the room, lists of key words, posters, etc can help pupils to recognise and spell the names of important pieces of equipment. Flow diagrams of key processes, time plans or design prompts with graphics may also be helpful. - Prepare visual prompts, using images, photos or symbols, showing the order to carry out a sequence of activities for a particular process. Checklists allow pupils to see what they have completed, what to do next and where to finish. - Some pupils will need to use nonvisual means to evaluate different products, to use this information to generate ideas and to become familiar with tools and other equipment. This may require extra time.
- Difficulties with motor skills	- For some pupils, supervision and help from an adult and/or buddy in the making stages is invaluable for them to learn and practise skills safely. - However, additional adults should promote pupils' independence by giving guidance and asking questions that enable pupils to: " think for themselves – pupils should not always be following a designing and making process step by step, with the teacher/ additional adult doing most of the thinking, and " perform tasks for themselves – be aware of the fine line between intervention and taking over a pupil's project. - Additional adults should be clear about: the order and importance of processes in a task; the skills and knowledge they must promote; and the health and safety rules, eg basic food hygiene.
- Difficulties with engagement, resilience and self-esteem	- Design and make assignments often give pupils opportunities to work as individuals or in a team, learning from the work of others. For some pupils, developing ideas with others can be challenging. Pairings and groupings need to be sensitive to this. - If writing is a trigger for children, pupils could contribute to product evaluation, where appropriate, using simple choice cards with words and/or symbols, eg for like/dislike, simple ranking or recording sheets. - Consider whether pupils, particularly those with SEMH needs, could judge their own work against the design specification rather than against the work of other pupils. - When pupils destroy work or struggle when they make mistakes, highlight the developing ideas and mistakes of professional designers and others. Show how mistakes can be corrected, to remove pupils' fear of making mistakes.
- Processing difficulties	- Using digital cameras to record each stage of designing and making, then sequencing the photos, can be a useful tool to aid pupils' memory of the stages of completing the work. - Display step-by-step reminders of key processes. Regularly repeat and reinforce previously learnt skills and processes. - Break down the designing and making stages into small manageable steps, and incorporate designing into 'mini making' tasks with specific targets. Use a tick list or wallchart so that pupils are clear about what they are working towards and how far they have got in relation to completing the project.

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Our approach to assessing DT is based on the essential knowledge, understanding and skills that all pupils should learn in order to progress through the curriculum.

Using the National Curriculum programme of study and the school progression framework, teachers consider broadly what the pupil actually knows, understands and can do. At the end of a sequence of lessons, teachers will identify on the medium term plan review aspects of the curriculum where more than 20% of the class struggled to grasp an expected objective. This will then be used to support teaching and planning for pupils, for example, within a following sequence of work or through revisiting associated knowledge in science or mathematics.

Teachers will also identify, on the basis of the **Design, Make and Evaluative Assignment**, any individuals who have fallen significantly behind expectations or who have displayed exceptional performance. For individuals who have shown particular struggle, support may be provided through enhanced provision or support within future sequences, or through opportunities with the teacher to revisit/conference key knowledge or skills not yet secured. For those who have shown exceptional performance, further opportunities may be provided in future sequences, for example, acting as a demonstrator or partner/coach to others, deepening thinking challenges throughout the process.