Curriculum Map - Design and Technology

Curriculum Area: **Design and Technology**

Curriculum Intent:
Within the context of education at Hilldene Primary School, Design and Technology (D&T) supports personal, social, cultural and creative development. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. Their mastery of D&T techniques is improved through creatively using a range of materials to design and make products.

By the time pupils leave us and go onto their next stage of education we want them to be able to: problem solve, be able to identify the effectiveness of a design and product and know how to evaluate and improve a product. During their time at Hilldene pupils will be taught different strands of D&T: mechanical systems, cooking and nutrition, structures, textile and inventions and achievements.

EYFS (Nursery and Reception)

Expressive Art and Design - Through the early years provision pupils will have opportunities to explore and be taught the following:
Explore different materials freely to develop ideas about how to use them.
Develop their own ideas and then decide which materials to use to express them.
Join different materials and explore different textures.
Create closed shapes with continuous lines and begin to use shapes to represent objects.
Draw with increasing complexity and detail.
Use drawing to represent ideas like movement or loud noises.
Show different emotions in their drawings and paintings.
Explore colour and colour-mixing.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Unit Taught: Teddy Bear's Picnic	**Unit Taught:** Eat More Fruit and Vegetables	**Unit Taught:** Seasonal Food	**Unit Taught:** American Food	**Unit Taught:** Bread	**Unit Taught:** Great British Dishes
Cooking and nutrition	**Skills taught:** -To be able to follow a simple set of instructions to make a food product. -To be able to design a	**Skills taught:** - To use adjectives to describe the taste, smell and texture of a variety of fruits and vegetables.	**Skills taught:** -To discuss the benefits and problems of seasonal foods. -To begin to practise and know how to slice,	**Skills taught:** - To discuss the benefits and problems of unseasonal food being available in shops all year round.	**Skills taught:** -To know and use appropriate adjectives to describe different types of bread. -To be able to compare	**Skills taught:** -To know how to chop and combine foods safely. -To know how to follow and adapt recipes

	food skewer to take on a picnic. -To begin to understand how to clean an area to make it hygienic.	- To use a knife to cut some fruits and vegetables in different ways. - To grate a fruit or vegetable (e.g. an apple or a carrot). - To peel a banana, apple and cucumber.	dice, beat, whisk, fold, sieve, roll and grate.	- To practise measuring and mixing ingredients. -To know how to use safe knife techniques for cutting medium and higher resistance foods. - To follow a recipe, with multiple steps, and increased accuracy. -To be able to use a hob / oven to heat food.	and evaluate bread products. -To know how to use equipment safely, hygienically and accurately. -To be able to develop ideas for how bread can be turned out (flat, plaited, bun etc.). -To be able to follow a recipe and make adaptations and alterations to make their own bread. -To evaluate the final product and suggest improvements.	using the ingredients that are available. -To know how to read a food label. - To evaluate how healthy a meal is based on its nutrition label. - To compare different meals and assess which is healthiest. - To follow a recipe to make a meal. - To add ingredients to a basic recipe to reflect global cuisine. - To offer suggestions for some alternative foods. - To design a meal for a particular purpose. - To design a meal for someone with particular dietary requirements. - To make and evaluate a meal, following my recipe and design.
	Knowledge taught: - To understand basic food hygiene, e.g. washing hands, tying long hair back and keeping surfaces clean. - To know different types of picnic food. - To begin to understand healthy and balanced food choices. To begin to understand and identify the different food groups	**Knowledge taught:** - To name a variety of fruits and vegetables. - To know that some fruits and vegetables need to be washed, cut, cored, peeled or grated before they can be eaten.	**Knowledge taught:** -To understand what seasonal food is. -To know that different parts of the world have seasonal food. -To know how a variety of fruits and vegetables are grown in the UK. -To begin to understand farming methods and how they are used to speed up / slow down the ripening process.	**Knowledge taught:** - To explain what the term ‘seasonal food’ means. - To know that different parts of the world have different seasonal foods. -To know that the USA has diverse climates and know that some regions produce food and others don’t - To distinguish	**Knowledge taught:** -To know different types of breads and their origins. -To know the nutritional content of bread. -To identify how bread can be used in different meals.	**Knowledge taught:** - To know that most foods we buy have nutrition labels to help us make informed choices about what we eat. - To know that calories come from fats, proteins and carbohydrates. -To know the RDA (recommended daily allowance) values for

			- To know the nutritional value of meat, eggs and dairy products. -To begin to explain how fish are caught or reared, processed and used in healthy meals. - To know that some foods, like wheat, are available all year round in the UK. - To describe the cycle of wheat production in the UK. -To know that some unusual foods are only in season for a brief period each year.	between foods that are grown in the UK and those that are grown abroad.		sugar. -To know how oats are a staple crop and are grown, harvested and processed.
	Key vocabulary taught: picnic equipment instructions prepare recipe cut Piece Favourite Range originally Eatwell guide biscuits Final product like skewer Shopping list Health Safety Steps Design	**Key vocabulary taught:** popular data gather pictogram skin (fruits and vegetables) flesh (fruits and vegetables) seeds variety grater hygienically purpose chop	**Key vocabulary taught:** seasonal food climate processed preserved season (food) savoury reared (fish) nutrients vegetarian ingredients	**Key vocabulary taught:**: diverse measure mix shape / mould traditional/ly modify resistance free / enslaved apparatus sift pour shred hob Supervised quantity Improve accurately Unseasonal food Slice Dice	**Key vocabulary taught:** compare Contribution record survey findings Weigh alter develop apply fairly	**Key vocabulary taught:** origins savoury Combine Dessert RDA (Recommended Daily Allowance) oats sugar harvested Cuisine Influence research Shelf-lives advice nutrition labels global cuisine dietary requirements

	food Taste Smell Texture Core Peel Grate Hygiene Evaluate safe			Beat Whisk Fold Sieve Roll Ripening process Reared		
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
		Unit Taught: Stable Structures	**Unit Taught:** Making Mini-Greenhouses		**Unit Taught:** Building Bridges	**Unit Taught:** Bird Houses Builders
Stable structures		**Skills taught:** - To identify the features of toy garages. - To make changes to the design of a stable structure to make it fit for purpose. - To explore a range of materials and evaluate the usefulness of their properties for a particular project. - To explore how to make stable structures that hold a given object. - To follow a design to make a stable structure. - To evaluate my finished structure against a set of given criteria.	**Skills taught:** - To explore a range of different greenhouses. - To use 3D nets to explore potential structures for a greenhouse, assessing their stability. - To investigate ways of making a structure more stable, e.g. by inserting dowelling or adding triangles at the joins. - To experiment with a range of materials to test which would be most appropriate for making the structure of a mini greenhouse. - To design a mini greenhouse using specific design criteria.		**Skills taught:** - To predict which beams will be strongest from their cross-section. - To test the strength of different beam shapes using paper and card. - To identify the three types of trusses commonly used in bridge design. - To build a truss bridge spanning a set width using paper straws. - To use a fair test to evaluate the strength of my truss bridge. - To test the arch heights to see which can bear the most load. - To make an arch frame. - To design, make and	**Skills taught:** - To investigate the appearance and function of a variety of different bird houses. - To identify what materials have been used to construct a variety of bird houses and suggest how the parts have been joined together. - To create a flat pack diagram of a constructed bird house. - To draw an exploded diagram. - To identify the tools associated with basic woodwork. - To measure, clamp, saw, sand and join wood. - To use a hand drill to

			- To select appropriate tools and materials to make a mini greenhouse. - To follow my design to make a mini greenhouse. - To evaluate my finished mini greenhouse for stability, effectiveness and visual appeal.		evaluate a prototype suspension bridge using a scale according to specific design criteria.	drill a hole in a piece of wood. - To design a birdhouse for a particular bird, taking into account the bird's needs. - To select appropriate tools and materials to use when making a birdhouse. - To create a sturdy bird house frame using wood. - To evaluate my finished bird house, taking into account the views of others to improve my work. - To use observation to evaluate the effectiveness of my bird house.
		Knowledge taught: - To know what the word 'stable' means. - To know some ways to make a structure more stable.	**Knowledge taught:** - To know what a greenhouse is and how they work. - To know how greenhouses are used today. - To explain how the shape of a structure affects its stability. - To know that the weight of the structure needs to be evenly spread on the base to make it secure. - To know that the wider a structure's base is, the more stable it will		**Knowledge taught:** - To know what beams and pillars are and how they are used in bridge construction. - To explain what a truss is and how trusses make bridges stronger. - To explain how arches work to make bridges stronger. - To explain how suspension bridges use tension forces to work.	**Knowledge taught:** - To know what a flat pack diagram is and can use it to identify each part of a structure. - To know the safety rules needed to follow when doing woodwork.

			be.			
		Key vocabulary taught: existing communicate compare functional purpose product Properties characteristics Strong Stiff Manipulate (materials) purpose tools accurately stable Structure Materials Equipment	**Key vocabulary taught:** greenhouse analyse discuss more/less mini Joining (materials) suitable specific criteria solution challenge successful suggest improvements stability Base features		**Key vocabulary taught:** Bridge Constructed Impact Daily life effectiveness beam/pillar Truss bridges Spread the load Stiffen Strengthen Established Arch bridges Test Build Tension forces Compression forces Distributed Support a weight Views (of people) Agreed Devise According construction suspension bridges Prototype model	**Key vocabulary taught:** Bird house Require Features Research Observe Record behaviours/needs Instructions Woodwork Safety precautions amendments Retail ideas Prospective buyer clamp exploded diagram 3-D diagram join (context of joining wood) Saw Sandpaper dowel
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
				Objectives covered within the science curriculum		**Objectives covered within the science curriculum**
Programming and electrical systems				**Skills taught:** -To create a simple circuit with incandescent bulbs and a switch. -To create a simple		**Skills taught:** -I can write an algorithm - I can select and use electronic components to construct a prototype

				circuit with an LED bulb and a resistor. -To make a circuit with a string of LED lights. -I can design an illuminated light box against a set of design criteria		
				Knowledge taught: -To be able to describe the difference between an LED and an incandescent light bulb.		**Knowledge taught:** - I can explain how computers and computer programs are used in a variety of products. -I can describe the typical design process for computer-controlled electronic products. -I can debug errors in an algorithm. -I can describe some examples of how computer hardware and software specialists work together to create new products.
				Key vocabulary taught: Illuminate/d Distinguishing sign/signage construct/ed/ion aesthetic practical Potential audiences Practical considerations Fit (in/on) Essential components adapted		**Key vocabulary taught:** -debug -algorithm -components -computer hardware -protype

				Electrical microcontrollers algorithms Instructions Controlled Edit programs traditional, incandescent bulbs LED resistor simple circuit		
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	Unit Taught: Moving Pictures	**Unit Taught:** Moving Minibeats **This will be replaced in September 2024 with 'puppets'.*		**Unit Taught:** Storybooks		**Unit Taught:** Chinese Inventions
Mechanical systems	**Skills taught:** - To make a sliding mechanism out of card. - To use a pivot and lever mechanism using card and a split pin. - To match a mechanism to the type of movement they produce. - To design a moving picture to include a variety of moving mechanisms. - To follow a design to create a moving picture for a particular purpose. - To evaluate my finished moving picture by identifying things that worked well and	**Skills taught:** - To make a wheel mechanism using card and a split pin. - To match a mechanism to the type of movement they produce accurately. -To evaluate a product and identify the effectiveness of this.		**Skills taught:** - To explore moving parts in storybooks, suggesting how they work and what purpose they serve. - To use a paper/card concertina to make an object pop out of a book. - To arrange and stick paper between pages to create a pop-out. - To use levers to create moving parts. - To create moving wheel mechanisms to create different effects. - To experiment with different fonts and graphic design		**Skills taught:** -To reflect on how inventions have changed the lives of others and helped shape the world. -To be able to follow a simple method for constructing a product. -To know how to make modifications to a product to suit the needs of the user. -To be able to experiment with different materials to test their suitability. -To be able to solve problems when making a product. -To be able to evaluate

	things that could be improved.			features. - To design pages of a storybook to include moving mechanisms and appropriate graphic features. - To follow my designs to create a storybook with moving mechanisms. - To evaluate how well my moving mechanisms work. - To evaluate the overall effectiveness of my storybook.		the effectiveness of their final product.
	Knowledge taught: - To know what a pivot and lever are.	**Knowledge taught:** -To know the difference between a pivot, lever and wheel mechanism. -To know which mechanism is the most appropriate to use in different situations.		**Knowledge taught:** - To explain what the words 'linkage', 'pivot', 'rotate' and 'lever' mean. - To explore moving parts in storybooks, suggesting how they work and what purpose they serve.		**Knowledge taught:** -To understand the history of some Chinese inventions. -To know about water-powered machines. -To know the use of prototypes and why these are important in designing a product. -To use knowledge and understanding of materials to identify the most suitable material to meet the design brief.
	Key vocabulary taught: Direction Move/ment Slider Join (materials)	**Key vocabulary taught**: Moving Identify Combine Variety		**Key vocabulary taught:** Storybook Lever particular systems		**Key vocabulary taught:** Significant Invention process paper

	Lever mechanism Generate Cut out Components Wheel mechanism Evaluate Ideas Include Previous experience Tools Materials Improve Finished product think/feel Positive feedback sliding mechanism pivot lever split pin Mechanism	evaluate wheel mechanism Sliding mechanism Lever mechanism effectiveness Develop (future) Incorporate Opinion Slit Split pin		Shape (materials) Precision Combine variety Mark out Measure accurately suited Neat creative Fair (feedback) Constructive (feedback) differently linkage rotate concertina components fonts Graphic (techniques) convey		Moveable-type press advantages Disadvantages method construct machine transmission (of gears) compar/e/ison modify needs properties selection desirable fit (a design) Prototype Success Criteria apply Solve problems ancient gunpowder compass/es gears
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
		**From September 2024 'Puppets' will be taught in year 2.*	**Unit Taught:** Seasonal Stockings		**Unit Taught:** Fashion and Textiles	
Textiles			**Skills taught:** -To compare and contrast different Christmas stockings for functionality and visual appeal. - To evaluate the function and visual appeal of a variety of objects. - To use pins to temporarily fasten two		**Skills taught:** - To identify straight stitch, zigzag stitch, whip/blanket stitch, blind stitch, buttonhole stitch and overlock stitch on a variety of ready-made garments. - To sew a basting stitch. - To sew a whip stitch. - To sew a hem.	

			pieces of fabric together. - To use running stitch, back stitch, overstitch and zigzag stitch to join two pieces of fabric together. - To hide the finishing knot. - To identify a variety of decorative techniques that have been used to decorate pieces. - To sew a button, bead, sequin or pipe cleaner onto a piece of fabric. - To embroider shapes and patterns into a piece of fabric. - To use appliqué to add decoration to a piece of fabric. - To design a product incorporating a range of decorative techniques. - To use a template to cut out front and back pattern pieces. - To follow a design to create a product. - To evaluate the function and visual appeal of my finished product.		- To sew back stitch. - To sew an appliqué decoration. - To use back stitch to embroider. - To design a product, including the necessary pattern pieces. - To use pattern pieces to measure, mark, cut and sew fabric. - To sew design elements according to design criteria. - To join two pieces of fabric by hand sewing, using an appropriate stitch. - To evaluate my finished product against a set of design criteria.	
			Knowledge taught: -To know the importance of punctuality of a product.		**Knowledge taught:** - To explain the process of turning raw cotton into cloth. - To know that products	

			- To explain the difference between the function and visual appeal of a product.		that are woven together are called textiles. - To know that different textiles have different properties, and can match these to their purpose. - To describe what the job of a fashion designer entails. - To know what a pattern piece is and why they are important when designing a garment.	
			Key vocabulary: Assess variety Compare contrast sew/ing stitch (sewing) thread needle secure decorative purpose button bead Sequin ribbon fabric Joining stitches successful safe sensible process functionality visual appeal stocking		**Key vocabulary:** manufacture textiles fashion Production of cotton cloth Sewing stitches Functional Decorative Potential uses criteria Develop design/s according Seam allowances Mark (fabric) pattern Hand-sewing stitch unravel whip/blanket stitch blind stitch buttonhole stitch overlock basting stitch hem	

			running stitch back stitch overstitch zigzag stitch knot embroider appliqué		pattern piece synthetic fashion designer	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	Unit Taught: Flying Kites			**Unit Taught:** British Inventors		**Unit Taught:** Chinese Inventions
Inventions and achievements	**Skills taught:** -To be able to test different products to identify which is the most suitable. -To make observations about a product. -To be able to follow instructions to make a kite. -To explore how to make a diamond kite. -To be able to explain and describe the colours and features that they have used. -To begin to evaluate a product. -To begin to be able to solve problems to make a successful kite.			**Skills taught:** -To investigate different ways of making fabric waterproof. -T describe how the invention of the internet has changed the world. -To identify how the internet has changed the world.		**Skills taught:** - To test a variety of types of paper for strength, absorbency and opacity. - To make recycled paper. - To make a hanging/floating compass. - To design and label my own compass. - To make a variety of kite prototypes and test their effectiveness. - To design, make and evaluate a kite according to specific design criteria.

	Knowledge taught: -To know why people make kites. -To know different types of kites. -To know about the children's festival in Japan and what this means. -To know what a carp kite is and why it is flown on Children's Day.			**Knowledge taught:** - To explain details of the invention of the mackintosh. - To explain details of the invention of the world wide web. - To describe how the invention of the internet has changed the world.		**Knowledge taught:** - To explain how the invention of paper helped shape the world. - To explain the traditional method for making paper.- To know how gunpowder was invented. - To explain how the invention of gunpowder helped shape the world. - To explain how the invention of the compass changed the world. - To explain what water-powered machines are and how they helped change the world. - To explain why kites were first invented and how they were made.
	Key vocabulary: History of kites Use of kites materials better predict/ion test instructions Kite shape fly equipment Aesthetically pleasing plan construct			**Key vocabulary:** invention telephone People's needs changed product's performance distinguish lives world reinforced Reinforced concrete reinforce (a material) Suitable for a purpose design criteria		**Key vocabulary:** Significant Invention process paper Moveable-type press advantages Disadvantages method construct machine transmission (of gears) compar/e/ison modify

	colour pattern attractive kite template observations carp kite Children's Day festival diamond kite evaluate			success/ful British inventor reflect Everyday problem creation Mackintosh World Wide Web internet		needs properties selection desirable fit (a design) Prototype Success Criteria apply Solve problems ancient gunpowder compass/es gears