Design and Technology Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1		Eat more fruit and vegetables		Moving Minibeasts		Stable Structure
Year 2		Puppets		Vehicles		Perfect pizza
Year 3		Storybooks		British Inventors		Light up signs
Year 4		Seasonal Stockings		Seasonal Food (Stuffed Peppers)		Making Mini Greenhouses
Year 5		Fashion and Textiles		Chinese Inventions		Building Bridges
Year 6		Burgers				Birdhouses

Progression of knowledge						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Cooking and Nutrition	• I understand basic food hygiene, e.g. washing hands, tying long hair back and keeping surfaces clean. • I can use a knife to cut some fruits and vegetables in different ways. • I can grate an apple and a carrot. • I can peel a banana, apple and cucumber. I can name a variety of fruits and vegetables. • I can use adjectives to describe the taste, smell and texture of a variety of fruits and vegetables. • I know that some fruits and vegetables need to be washed, cut, cored, peeled or grated before they can be eaten.	• I can name a variety of pizza toppings. • I can use the model of the balanced plate to evaluate how healthy different pizzas are. • I can explore different types of bread and evaluate which would work best for a pizza base. • I can identify which food group a variety of pizza toppings belong to. • I can sort pizza toppings into groups based on different criteria, e.g. animal vs plant products. • I can explain why each of the food groups is important for a balanced diet. • I can design and make a healthy pizza following given criteria. • I can evaluate my finished pizza, saying what I think and feel about it.		• I can explain what the term 'seasonal food' means. • I know that different parts of the world have different seasonal food. • I can discuss the benefits and problems of unseasonal food being available in shops all year round. • I know that some foods, like wheat, are available all year round in the UK. • I can practise cooking skills including slicing, dicing, beating, whisking, folding, sieving, rolling and grating. • I can distinguish between fruits that are grown in the UK and those that are grown abroad. • I know how food producers can speed up or slow down the ripening process to make fruits and vegetables available all year round. • I can follow a recipe to make stuffed peppers.		• I know that most foods we buy have nutrition labels to help us make informed choices about what we eat. • I know that calories come from fats, proteins and carbohydrates. • I can evaluate how healthy a burger is based on its nutrition label. • I can compare different burgers and assess which is healthiest. • I can explain some of the different ways in which burger patties are cooked. • I can follow a recipe to make a beef, turkey or vegetable burger patty. • I can add ingredients to a basic burger patty to reflect global cuisine. • I can follow a recipe to make different burger sauces, including

				• I know some of the nutrients we get from fruits, vegetables, meat, fish and dairy products. • I know when certain meats are in season in the UK and which are available all year round. • I know some vegetarian options that provide the same nutrients as meat. • I can use what I have learnt about seasonal food to design healthy meals and menus.		salsa, tzatziki and barbecue sauce. • I can design a burger menu to incorporate different patties, sides and sauces. • I can explore, taste and assess different types of bread and their suitability for a burger bun. • I can offer suggestions for some alternatives for bread. • I can add mixtures of herbs and spices to a basic bread dough to make flavoured burger buns. • I can design a burger for a particular purpose. • I can design a burger for someone with particular dietary requirements. • I can make and evaluate a burger, following my recipe and design.
Stable Structures	• I can identify the features of toy garages. • I know what the word 'stable' means.		• I can explain how concrete is used to make structures more stable. • I can create a structure strong	I know what a greenhouse is and how they work. • I can explore a range of different greenhouses.	• I know what beams and pillars are and how they are used in bridge construction. • I can predict which beams will be	I can investigate the appearance and function of a variety of different bird houses.

	• I can make changes to the design of a stable structure to make it fit for purpose. • I can explore a range of materials and evaluate the usefulness of their properties for a particular project. • I can explore how to make stable structures that hold a given object. • I can follow a design to make a stable structure. • I know some ways to make a structure more stable. • I can evaluate my finished structure against a set of given criteria.		enough to hold a dictionary using just newspaper and tape	• I know how greenhouses are used today.) • I know that the wider a structure's base is, the more stable it will be. • I can explain how the shape of a structure affects its stability. • I know that the weight of the structure needs to be evenly spread on the base to make it secure. • I can use 3D nets to explore potential structures for a greenhouse, assessing their stability. (maths link) • I can experiment with a range of materials to test which would be most appropriate for making the structure of a mini greenhouse. • I can design a mini greenhouse using specific design criteria. I can investigate ways of making a structure more stable, e.g. by	strongest from their cross-section. • I can test the strength of different beam shapes using paper and card. • I can explain what a truss is and how trusses make bridges stronger. • I can identify the three types of trusses commonly used in bridge design. • I can build a truss bridge spanning a width of 40cm using paper straws. • I can use a fair test to evaluate the strength of my truss bridge. • I can explain how arches work to make bridges stronger. • I can test the arch heights to see which can bear the most load. • I can make an arch frame. • I can explain how suspension bridges use tension forces to work. • I can design, make and evaluate a prototype suspension	• I can identify what materials have been used to construct a variety of bird houses and suggest how the parts have been joined together. • I know what a flat pack diagram is and can use it to identify each part of a structure. • I can create a flat pack diagram of a constructed bird house. • I can draw an exploded diagram. • I can identify the tools associated with basic woodwork. • I can measure, clamp, saw, sand and join wood. • I can use a hand drill to drill a hole in a piece of wood. • I know the safety rules I need to follow when doing woodwork. • I can design a bird house for a particular bird, taking into account the bird's needs • I can select appropriate tools and materials to use

				inserting dowelling or adding triangles at the joins. • I can select appropriate tools and materials to make a mini greenhouse. • I can follow my design to make a mini greenhouse. • I can evaluate my finished mini greenhouse for stability, effectiveness and visual appeal.	bridge using a scale of 1:100 according to specific design criteria.	when making a bird house. • I can create a sturdy bird house frame using wood. • I can evaluate my finished bird house, taking into account the views of others to improve my work. • I can use observation to evaluate the effectiveness of my bird house.
Programming and electrical systems			• I can explore and analyse illuminated signs. • I can create a simple circuit with incandescent bulbs and a switch. • I can describe the difference between an LED and an incandescent light bulb. • I can create a simple circuit with an LED bulb and a resistor. • I can make a circuit with a string of LED lights. • I can design an illuminated light box against a set of design criteria.			I can explain how computers and computer programs are used in a variety of products. • I can explain how modern memory chips work to store information. • I can write an algorithm to suggest how various appliances might work. • I know what a computer engineer is and what they do. • I can describe some examples of how computer hardware and software specialists work together to create new products.

			• I can select materials, tools and components to create a free-standing structure. • I can make a stable, free-standing structure to house an electrical circuit. • I can strip, twist and join wire to make permanent connections. • I can insert an electrical circuit into a free-standing structure to create an illuminated light box. • I can evaluate the effectiveness of my finished product against the design criteria.			• I can develop and build a prototype pedestrian crossing using computer programming. • I can develop, model and communicate ideas for an embedded system which monitors and controls a door, room or both. • I can describe the typical design process for computer-controlled electronic products. • I can debug errors in an algorithm. • I can suggest ways to change an algorithm to improve a system. • I can select and use electronic components to construct a prototype of an embedded computer-controlled room system. • I can evaluate my design for a computer-controlled system and consider the views of others to improve my work.

Mechanical Systems	• I can make a sliding mechanism out of card. • I know what a pivot and lever are. • I can use a pivot and lever mechanism using card and a split pin. • I can make a wheel mechanism using card and a split pin. • I can match a mechanism to the type of movement they produce. • I can design a moving minibeast picture to include a variety of moving mechanisms. • I can follow a design to create a moving minibeast picture for a particular purpose. • I can evaluate my finished moving minibeast picture by identifying things that worked well and things that could be improved.	• I can investigate a range of vehicles, identifying and labelling their features. • I know what an axle is. • I know what a chassis is. • I can explore different ways of using axles, chassis and wheels to create a moving base. • I can design a vehicle with wheels, axles and chassis, as well as a body. • I can follow a design to make a moving vehicle. • I can evaluate my finished moving vehicle.	I can explore moving parts in storybooks, suggesting how they work and what purpose they serve. • I can explain what the words 'linkage', 'pivot', 'rotate' and 'lever' mean. • I can use a paper concertina to make an object pop out of a book. • I can arrange and stick paper between pages to create a pop-out. • I can use levers to create moving parts. • I can create moving wheel mechanisms to create different effects. • I can experiment with different fonts and graphic design features. • I can design pages of a storybook to include moving mechanisms and appropriate graphic features. • I can follow my designs to create a storybook with moving mechanisms. • I can evaluate how		• I explore how different transmissions create different movements. • I can use a crank to change the motion on a transmission from circular to linear motion.	

			well my moving mechanisms work. • I can evaluate the overall effectiveness of my storybook			
Textiles		• I can explore a variety of puppets, identifying and labelling their features. • I can cut out felt using a simple template. • I can stick pieces of felt together to make a finger puppet. • I can add pieces of felt and other materials to a finger puppet to create features, such as eyes, hats and mouths. • I can use a running stitch to join two pieces of fabric together. • I can use overstitch to join two pieces of fabric together. • I can sew a button onto a piece of fabric. • I can design a glove puppet for a particular purpose. • I can follow a design to make a glove puppet by		I can explain the difference between the function and visual appeal of a product. • I can evaluate the function and visual appeal of a variety of Christmas stockings. • I can use pins to temporarily fasten two pieces of fabric together. • I can use a running stitch, back stitch, overstitch and zigzag stitch to join two pieces of fabric together. • I can hide the finishing knot. • I can identify a variety of decorative techniques that have been used to decorate Christmas stockings. • I can sew a button, bead, sequin or pipe cleaner onto a piece of fabric. • I can embroider shapes and patterns	I can explain the process of turning raw cotton into cloth. • I know that products that are woven together are called textiles. • I know that different textiles have different properties, and can match these to their purpose. • I can identify straight stitch, zigzag stitch, whip/blanket stitch, blind stitch, buttonhole stitch and overlock stitch on a variety of ready-made garments. • I can describe what the job of a fashion designer entails • I can sew a basting stitch. • I can sew a whip stitch. • I can sew a hem. • I can sew back stitch. • I can sew an appliqué decoration.	

		sewing two pieces of fabric together and adding decorations. • I can evaluate my finished glove puppet by identifying what went well and what could be improved.		into a piece of fabric. • I can use appliqué to add decoration to a piece of fabric. • I can design a Christmas stocking incorporating a range of decorative techniques. • I can use a template to cut out front and back pattern pieces. • I can follow a design to create a Christmas stocking. • I can evaluate the function and visual appeal of my finished Christmas stocking.	• I can use back stitch to embroider. • I know what a pattern piece is and why they are important when designing a garment. • I can design a drawstring bag, including the necessary pattern pieces. • I can use pattern pieces to measure, mark, cut and sew fabric. • I can sew design elements according to design criteria. • I can join two pieces of fabric by hand sewing, using an appropriate stitch. • I can evaluate my finished product against a set of design criteria.	
Inventions and achievements			I can explain about the invention of the mackintosh. • I can investigate ways of making fabric waterproof. • I can explain about the invention of the world wide web. • I can describe how the invention of the		• I can explain how the invention of paper helped shape the world. • I can explain the traditional method for making paper • I can test a variety of types of paper for strength, absorbency, opacity, etc.	

			internet has changed the world.		• I can make recycled paper. • I know how gunpowder was invented. • I can explain how the invention of gunpowder helped shape the world . • I can explain how the invention of the compass changed the world. I can make a hanging/floating compass. • I can design and label my own compass. • I can explain what water-powered machines are and how they helped change the world. • I can explain why kites were first invented and how they were made. • I can make a variety of kite prototypes and test their effectiveness. • I can design, make and evaluate a kite according to specific design criteria.	