Overview of Progression in Design Technology Skills and Knowledge

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Developing planning and communicating ideas **(Design)**	Think of ideas and share their simple designs through talking and drawing. Design purposeful products for themselves and others. Suggest ideas and explain what they are going to do.	Design purposeful, functional and appealing products for themselves and others. Develop their design ideas through discussion, observation, drawing and modelling. Identify a purpose for what they intend to design and make. Make simple drawings and label parts.	Generate ideas for an item considering it's purpose and the user/s. Identify a purpose and establish criteria for a successful product. Plan the order of their work before starting. Make drawings with labels when designing.	Generate ideas, considering the purposes for which they are designing. Make labelled drawings from different views showing specific features Develop a clear idea of what has to be done, planning how to use materials, equipment and processes. Evaluate products and identify criteria that can be used for their own designs	Generate ideas through brainstorming and identify a purpose for their product. Draw up a specification for their design. Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail. Use results of investigations, information sources, including ICT when developing design ideas.	Communicate their ideas through detailed labelled drawings. Develop a design specification. Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways. Plan the order of their work, choosing appropriate materials, tools and techniques.
Working with tools, equipment, materials and components to make quality products. **(Make)**	Make their design using appropriate techniques. With help, measure, mark out, cut and shape a range of materials. Use tools e.g. scissors safely Assemble, join and combine materials and components together using a variety of temporary methods, e.g. glues or masking tape.	Begin to select tools and materials, use vocabulary to name and describe them. Measure, cut and score with some accuracy. Use hand tools safely and appropriately. Assemble, join and combine materials in order to make a product.	Select tools and techniques for making their product. Measure, mark out, cut, score and assemble components with more accuracy. Work safely and accurately with a range of simple tools.	Select appropriate tools and techniques for making their product. Measure, mark out, cut and shape a range of materials using appropriate tools, equipment and techniques. Join and combine materials and components in temporary and permanent ways.	Select appropriate materials, tools and techniques for making their product. Measure and mark out accurately. Use skills in using different tools and equipment safely and accurately.	Select appropriate materials, tools, components and techniques for making their product. Assemble components, make working models. Use tools and equipment safely, accurately and confidently.
Evaluating processes and products **(Evaluate)**	Evaluate their product by discussing how well it works in relation to the purpose. Evaluate their products as they are developed, beginning to identify strengths and possible changes they might make.	Evaluate against their design criteria. Talk about their product, saying what they like and dislike about them. Evaluate their products as they are developed, identifying strengths and possible changes they might make.	Evaluate their product against original design criteria e.g. how well it meets its intended purpose. Disassemble and evaluate familiar products.	Evaluate their work both during and at the end of the assignment. Evaluate their products carrying out appropriate tests.	Evaluate a product against the original design specification. Evaluate their products personally and seek evaluation from others.	Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests. Record their evaluations using drawings with labels. Evaluate against their original criteria and suggest ways that their product could be improved.
Technical skills and knowledge						
Food & Nutrition	**Eat more fruit and vegetables** Begin to use techniques such as cutting, peeling and grating. Use a knife to cut some fruit and vegetables. In different ways.. Grate an apple and a carrot. Peel a banana, apple and cucumber. Understand basic food hygiene e.g. washing hands, cleaning surfaces. Name a variety of fruits and vegetables. Use adjectives to describe the taste, smell and texture of a variety of fruits and vegetables. Know that some fruits and vegetables need to be washed, cut, cored, peeled or grated before they can be eaten.	**Perfect Pizzas** Know how to use techniques such as cutting, peeling and grating. Know how to prepare simple dishes safely and hygienically. Name a variety of pizza toppings. Use the model of the balanced plate to evaluate how healthy different pizzas are. Explore different types of bread and evaluate which would work best for a pizza base. Identify which food group a variety of pizza toppings belong to. Sort pizza toppings into groups based on different criteria, e.g. animal vs plant products. Explain why each of the food groups is important for a balanced diet. Design and make a healthy pizza following given criteria Evaluate their finished pizza, saying what they think and feel about it.	.	**Seasonal Food** Practise cooking skills including slicing, dicing, beating, whisking, folding, sieving, rolling and grating. Follow recipes to make seasonal foods. Know how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. Know that different parts of the world have different seasonal food. Discuss the benefits and problems of unseasonal food being available in shops all year round. Know that some foods, like wheat, are available all year round in the UK. Know how food producers can speed up or slow down the ripening process to make fruits and vegetables available all year round. Know some of the nutrients we get from fruits, vegetables, meat, fish and dairy products. Know when certain meats are in season in the UK and which are available all year round. Explain how fish are caught or reared, processed and used in Use knowledge of seasonal food to design healthy meals and menus .		**Burgers** Use cooking skills including slicing, dicing, beating, whisking, folding, sieving, rolling and grating, independently and confidently. Work safely and hygienically with confidence and independence. Know that most foods we buy have nutrition labels to help us make informed choices about what we eat. Know that calories come from fats, proteins and carbohydrates. Compare different burgers and assess which is healthiest based on its nutrition label. Explain some of the different ways in which burger patties are cooked. Follow a recipe to make a beef, turkey or vegetable burger patty. Add ingredients to a basic burger patty to reflect global cuisine. Follow a recipe to make different burger sauces, including salsa, tzatziki and barbecue sauce. Explore, taste and assess different types of bread and their suitability for a burger bun. Add mixtures of herbs and spices to a basic bread dough to make flavoured burger buns. Design a burger to incorporate different patties, sides and sauces

						and for a particular purpose or dietary need. Make and evaluate a burger, following their recipe and design.
Textiles		**Puppets** Explore a variety of puppets, identifying and labelling their features. Cut out felt using a simple template. Stick pieces of felt together to make a finger puppet. Add pieces of felt and other materials to a finger puppet to create features, such as eyes, hats and mouths. Use running stitch to join two pieces of fabric together. Use overstitch to join two pieces of fabric together. Sew a button onto a piece of fabric. Design and make a glove puppet by sewing two pieces of fabric together and adding decorations. Follow a design to make a glove puppet by sewing two pieces of fabric together and adding decorations. Evaluate their finished glove puppet by identifying what went well and what could be improved.		**Seasonal stockings.** Evaluate the function and visual appeal of a variety of Christmas stockings. Use pins to temporarily fasten two pieces of fabric together Use running stick, back stitch, overstitch and zigzag stitch to join two pieces of fabric together. Identify a variety of decorative techniques that have been used to decorate Christmas stockings. Sew a button, bead, sequin or pipe cleaner onto a piece of fabric Embroider shapes and patterns into a piece of fabric. Use appliqué to add decoration to a piece of fabric. Use a template to cut out front and back pattern pieces. Design and make a Christmas stocking incorporating a range of decorative techniques Use a template to cut out front and back pattern pieces. Follow a design to create a Christmas stocking. Evaluate the function and visual appeal of their finished Christmas stocking.	**Fashion and Textiles** Know that products that are woven together are called textiles. Know that different textiles have different properties, and can match these to their purpose. Identify straight stitch, zigzag stitch, whip/blanket stitch, blind stitch, buttonhole stitch and overlock stitch on a variety of ready-made garments. Describe what the job of a fashion designer entails. Sew a basting stitch. Sew a whip stitch. Sew a hem. Sew back stitch. Sew an appliqué decoration. Use back stitch to embroider. Know what a pattern piece is and why they are important when designing a garment. Use pattern pieces to measure, mark, cut and sew fabric .Design a drawstring bag, including the necessary pattern pieces. Sew design elements according to design criteria. Join two pieces of fabric by hand sewing, using an appropriate stitch. Evaluate their finished product against a set of design criteria.	
Structures	**Stable Structures** Identify the features of toy garages. Know what the word 'stable' means. Make changes to the design of a stable structure to make it fit for purpose. Explore a range of materials and evaluate the usefulness of their properties for a particular project. Explore how to make stable structures that hold a given object. Follow a design to make a stable structure. Know some ways to make a structure more stable. Evaluate their finished structure against a set of given criteria.		**British Inventors** Explain how concrete is used to make structures more stable. Create a structure strong enough to hold a dictionary using just newspaper and tape.	**Making Mini Greenhouses** Know what a greenhouse is and how they work. Explore a range of different greenhouses. Know how greenhouses are used today. Explain how the shape of a structure affects its stability. Know that the weight of the structure needs to be evenly spread on the base to make it secure. Know that the wider a structure's base is, the more stable it will be. Use 3D nets to explore potential structures for a greenhouse, assessing their stability. Investigate ways of making a structure more stable, e.g. by inserting dowelling or adding triangles at the joins. Experiment with a range of materials to test which would be most appropriate for making the structure of a mini greenhouse. Design a mini greenhouse using specific design criteria. Select appropriate tools and materials to make a mini greenhouse. Follow their design to make a mini greenhouse Evaluate their finished mini greenhouse for stability, effectiveness and visual appeal	**Bridges** Know what beams and pillars are and how they are used in bridge construction. Predict which beams will be strongest from their cross-section. Test the strength of different beam shapes using paper and card. Explain what a truss is and how trusses make bridges stronger. Identify the three types of trusses commonly used in bridge design. Build a truss bridge spanning a width of 40cm using paper straws. Use a fair test to evaluate the strength of their truss bridge. Explain how arches work to make bridges stronger. Test the arch heights to see which can bear the most load. Make an arch frame. Explain how suspension bridges use tension forces to work. Design, make and evaluate a prototype suspension bridge using a scale of 1:100 according to specific design criteria.	**Bird House Builders** Investigate the appearance and function of a variety of different bird houses. Identify what materials have been used to construct a variety of bird houses and suggest how the parts have been joined together. Know what a flat pack diagram is and can use it to identify each part of a structure. Create a flat pack diagram of a constructed bird house. Draw an exploded diagram. Identify the tools associated with basic woodwork. Measure, clamp, saw, sand and join wood. Use a hand drill to drill a hole in a piece of wood. Know the safety rules they need to follow when doing woodwork. Design a bird house for a particular bird, taking into account the bird's needs. Select appropriate tools and materials to use when making a bird house. Create a sturdy bird house frame using wood. Evaluate their finished bird house, taking into account the views of others to improve their work.

						Use observation to evaluate the effectiveness of their bird house.
Mechanisms	**Moving Minibeasts** Make a sliding mechanism out of card. Know what a pivot and lever are. Use a pivot and lever mechanism using card and a split pin. Make a wheel mechanism using card and a split pin. Match a mechanism to the type of movement they produce. Design a moving minibeast picture to include a variety of moving mechanisms Follow a design to create a moving minibeast picture for a particular purpose. Evaluate their finished moving minibeast picture by identifying things that worked well and things that could be improved	**Vehicles** Investigate a range of vehicles, identifying and labelling their features. Know what an axle is. Know what a chassis is. Explore different ways of using axles, chassis and wheels to create a moving base. Design a vehicle with wheels, axles and chassis, as well as a body Follow a design to make a moving vehicle. Evaluate their finished moving vehicle.	**Storybooks** Explore moving parts in storybooks, suggesting how they work and what purpose they serve. Explain what the words 'linkage', 'pivot', 'rotate' and 'lever' mean. Use a paper concertina to make an object pop out of a book. Arrange and stick paper between pages to create a pop-out. Use levers to create moving parts. Create moving wheel mechanisms to create different effects. Experiment with different fonts and graphic design features. Design pages of a storybook to include moving mechanisms and appropriate graphic features. Follow their designs to create a storybook with moving mechanisms. Evaluate how well their moving mechanisms work. Evaluate the overall effectiveness of their storybook.		**Moving toys** Recognise the movement of a mechanism within a toy or model. Understand that a cam mechanism will change rotary motion into linear motion. Investigate examples of cam toys describe how they work using appropriate vocabulary. Explore how different shaped cams affect the movement of the follower. Design and make a moving toy with a cam mechanism. Evaluate their finished moving toy by identifying things that worked well and things that could be improved.	
Electrical systems			**Light-up signs** Explore and analyse illuminated signs. Create a simple circuit with incandescent bulbs and a switch. Describe the difference between an LED and an incandescent light bulb. Create a simple circuit with an LED bulb and a resistor. Make a circuit with a string of LED lights. Design an illuminated light box against a set of design criteria. Select materials, tools and components to create a free-standing structure.			**Programming Pioneers** Explain how computers and computer programs are used in a variety of products. Explain how modern memory chips work to store information. Write an algorithm to suggest how various appliances might work. Know what a computer engineer is and what they do. Describe some examples of how computer hardware and software specialists work together to create new products. Develop and build a prototype pedestrian crossing using computer programming. Develop, model and communicate ideas for an embedded system which

			Make a stable, free-standing structure to house an electrical circuit. Strip, twist and join wire to make permanent connections. Insert an electrical circuit into a free-standing structure to create an illuminated light box. Evaluate the effectiveness of their finished product against the design criteria.			monitors and controls a door, room or both. Describe the typical design process for computer-controlled electronic products. Debug errors in an algorithm. Suggest ways to change an algorithm to improve a system. Select and use electronic components to construct a prototype of an embedded computer-controlled room system. Evaluate their design for a computer-controlled system and consider the views of others to improve their work
Inventions and Achievements			**British Inventors** Explain about the invention of the mackintosh. Investigate ways of making fabric waterproof. Explain about the invention of the world wide web. Describe how the invention of the internet has changed the world			**Programming Pioneers** Know that Charles Babbage created the first mechanical computer. Know that Ada Lovelace is referred to as the world's first computer programmer. Know that Steve Jobs and Steve Wozniak co-founded Apple, Inc. to make the first Apple computers.