Prince Albert PRIMARY SCHOOL

Design and Technology: Long Term Overview

	Autumn	Spring	Summer
N	Begin to use various one-handed tools such as scissors for snipping paper. Explore joining materials together using glue.	Explore joining materials together using tape. Build models using construction sets to create small world settings. Explore materials freely to develop their own ideas about what they want to make.	To know that tools can be used for a purpose. Learn how to use tools safely and with control. To use taught techniques to join materials independently.
R	Join materials together with a range of adhesives. To use adhesives for a purpose. Build structures using a variety of materials and joining techniques eg flange/folding. Explore the properties of materials. Understand that tools are used for a purpose. Use tools and techniques safely and competently. To interact with a range of technology: Beebots	Use appropriate tools to cut and chop vegetables. Make a range of models/structures with junk materials and construction kits independently. Discuss the models they have made and talk about what they might do differently next time. To interact with a range of technology: drawing app. To thread using varied materials. To independently use one-handed tools for a purpose – hammer and wood.	To design, make and evaluate models and structures. To create props and costumes for role play. To begin to understand and make healthy food choices. To follow a simple recipe to bake.
Y1	**Structures** **Freestanding structures** Explore a range of freestanding structures. Describe different characteristics of materials. Measure and mark out the materials needed for the structure. Use joining, rolling and folding to make structures stronger, stiffer and more stable.	**Mechanisms** **Sliders and Levers** Understand that different mechanisms produce different types of movements, e.g. wheels, sliders, levers and hinges. Explore and use simple mechanisms. e.g. use sliders in moving pictures, hinges into models. Cut, shape and join using scissors, glue, paper fasteners and masking tape.	**Food** **Preparing fruit and vegetables** Understand the principles of a healthy and varied diet- five portions of fruit and vegetables every day. Identify where a range of fruit and vegetables come from. Use simple tools with help to prepare food safely (a knife and knife skills (bridge method) to cut and slice: using a peeler to peel – new skill Y1).

	Build structures, joining components together to create a finished product. Work in order when making a structure.		Wash hands and keep work surfaces clean. Prepare a dish that is healthy and contains a variety of food (design, make, evaluate).
Y2	**Mechanisms** **Wheels and axles** Identify how wheels and axles produce movement. Explore the number and type of axles and wheels. Incorporate wheels and axles into their products. Describe the properties of the materials that I have used. Add suitable designs to reflect the purpose	**Textiles** **Templates and joining techniques** Identify different forms of textiles/fabric e.g. felt, velvet, cotton. To describe textiles by the way they feel. To identify why fabrics are chosen based on their properties (i.e. wool is used because it is soft and warm). To use certain fabrics based on their suitability to product. To understand why templates are used. To use different fabrics and materials in collages. To use a needle and thread To use a running stitch to join fabrics.	**Food** **Healthy and varied diet** To identify food groups and sort onto the Eatwell plate and identify that this makes up a healthy diet. To understand where a range of food comes from (plant or animal). To identify the part of the plant that we eat To describe the properties of food ingredients: taste, smell, texture and consistency. To use tools with help to prepare food safely. (cut, slice, peel and grate – new skills Y2). To measure ingredients using cup, tsp, tbsp. To prepare a dish that contains a variety of food and is healthy. To identify basic food hygiene practices.
Y3	**Structures** **Shell Structures** Explore a range of shell structures. Use methods to stiffen and strengthen structures (e.g. corrugating, laminating etc) Measure materials. Use appropriate tools for cutting and scoring materials. Join materials using a range of joining skills. To develop and use knowledge of nets of cubes and cuboids to create a product. To model ideas using computer aided design	**Textiles** **2D shape to 3D product** Investigate the different properties that textiles have e.g. feel, insulation, texture and waterproof. Thread a needle independently. Select appropriate material for my product. Create and use templates to accurately cut out textile design. Join textiles using a running stitch and back stitch. Leave a seam allowance. Use finishing techniques to achieve a required effect e.g. using buttons, beads, sequins.	**Food** **Healthy and varied diet** Identify whether foods are grown (underground, on plants), reared, caught or processed. Describe the properties of ingredients and importance of a varied diet to keep healthy. Use utensils and equipment to prepare and combine food to prepare a dish (mixing, rolling, kneading and baking). Follow a recipe. Measure or weigh ingredients using scales. To prepare and cook dishes safely and hygienically. Present my food product well.

	Work in order when making a structure.	Combine materials to add strength and visual appeal.	
Y4	**Mechanical Systems** **Pneumatics** Understand how levers and linkages or pneumatic systems create movement. Understand why levers and linkages or pneumatic systems are used. Identify the difference between fixed and loose pivots. Identify where fixed and loose pivots are used in products. Join materials to make product using both permanent and temporary fastening. Measure, mark out and cut with increasing accuracy. To create a high-quality finish. Produce models that incorporate mechanical systems such as levers, linkages or pneumatic systems to create movement.	**Electronics** **Electrical Systems – Control** To explore products with electrical systems. To explore the Micro:Bit as a control system. Apply scientific knowledge to create series and parallel circuits. To use electrical systems in their product for example, series circuits incorporating switches, buzzers and bulbs. Apply their understanding of computing to control their product. To use finishing and decorative techniques suitable for the product they are designing and making.	**Food** **Celebrating culture and seasonality** To explore the seasonality of food as part of a healthy and varied diet. Use appropriate utensils, equipment and techniques to prepare and combine food in order to prepare a dish (rubbing method, blind baking, piping, glazing) Identify where food comes from – UK and the wider world. To explore the impact of climate change on food. Measure accurately to the nearest gram. Present food ensuring that it is interesting, appealing and fit for purpose.

Y5	**Food** **Celebrating culture and seasonality** Explain how there are different substances in food and drink required for good health. Understand food can be grown, reared or caught in the UK and the wider world. Understand the seasonality of food. Understand that some foods may not be eaten raw as it is unsafe. Measure ingredients accurately using different units. Use a range of utensils and equipment to prepare a dish. Use a range of techniques to prepare and combine food (kneading and baking) in order to prepare a dish. Present and package food using a range of DT skills.	**Machines and Mechanisms** **Pulley mechanism** Understand that mechanical systems have an input and an output system. Develop a greater understanding of how cams, pulley or gears create movement. Design and make a product that incorporates a cam mechanism, pulleys or gears. To explain how parts of the product will work. To refine ideas by making prototypes Apply a high-quality finish. To identify the strengths and areas for improvement in their work.	**Structures** **Frame Structures** To select materials considering intended use of product, the aesthetics, functionality and sustainability. To select materials which are best suited to stiffen and reinforce the product. To stiffen, strengthen and reinforce a range of 3D structures. To use a range of tools i.e. junior hacksaws, G clamps, bench hooks safely. To join wood for strength and stability. Communicate ideas through CAD. To explain how the product meets the design criteria. To use finishing techniques to strengthen and improve the appearance of their models.
Y6	**Textiles** **Combining different fabric shapes** Choose textiles appropriate to the user and intended use. Design, plan and decorate a fabric piece. Communicate design ideas through computer aided design. Use own patterns and template. Use a range of techniques to join materials, e.g. over sewing, back stitch and/or blanket stitch	**Control and monitoring** **Alarm system** To explore electrical systems with a range of sensors. Create circuits using electronic kits that employ several components. To develop a detailed design brief. Apply computing skills to program, monitor and control their products. Identify faults in their own electrical system.	**Food** **Adapting a recipe** To compare nutritional benefits of ingredients To select and use appropriate utensils for specific jobs. To measure accurately and calculate ratios of ingredients to scale up or down from a recipe. To adapt recipes to change appearance, taste, texture or aroma. To formulate a step-by-step plan to guide making, listing tools, equipment and ingredients.

	Join textiles using art skills such as stitching, embroidering and plaiting to make a durable and desirable product. Produce a 3D textile product from a combination of accurately made pattern pieces, fabric shapes and different fabrics. Create a product that is strong and fit for purpose.	To refine ideas by making prototypes.	To prepare and cook a variety of dishes safely and hygienically including the use of a heat source. To use scientific knowledge to evaluate the irreversible changes that occur. To use scientific knowledge of micro-organisms to store food to minimise cross-contamination.