



## Toddington St. George C of E School Curriculum Intent – Knowledge Builder

### Art and design- Primary Curriculum

#### Subject Intent Statement

At TSG we believe that our Design and Technology curriculum enables children to use their creativity and imagination to design and make a product. The skills to do this are taught progressively, to ensure that all children are able to learn and practice in order to develop as they move through the school. Design Technology encourages children to solve problems, both as individuals and as part of a team. The children are given opportunities to evaluate, adapt and improve their product, which is a life-long skill. As a school we aim to link, wherever possible, skills learned in other subjects, such as maths, science, computing and art, thus ensuring links are made in a cross-curricular way, supporting children's interests and motivations. Opportunities are given for children to learn basic cooking skills, which will support them through life.

Year 1	Year 2	Year 3	Year 4
<p><b>Key knowledge:</b></p> <p><b><u>Everyday products</u></b> Everyday products are objects that are used routinely at home and school, such as a toothbrush, cup or pencil. All products are designed for a specific purpose.</p> <p><b><u>Processes</u></b> An axle is a rod or spindle that passes through the centre of a wheel to connect two wheels.</p> <p><b><u>Generation of ideas</u></b> Design criteria are the explicit goals that a project must achieve.</p> <p><b><u>Structures</u></b> Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink.</p> <p><b><u>Investigation</u></b> Specific tools are used for particular purposes. For example, scissors are used for cutting and glue is used for sticking.</p> <p><b><u>Evaluation</u></b> A strength is a good quality of a piece of work. A weakness is an area that could be improved.</p> <p><b><u>Materials - cutting and joining textiles</u></b> Scissors are used to cut fabrics. Glue and simple stitches, such as running stitch, can be used to join fabrics. Running stitch is made by passing a needle in and out of fabric at an even distance.</p>	<p><b>Key Knowledge:</b></p> <p><b><u>Staying Safe</u></b> Hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriately and wiping up spills.</p> <p><b><u>Electricity</u></b> A series circuit is made up of an energy source, such as a battery or cell, wires and a bulb. The circuit must be complete for the electricity to flow.</p> <p><b><u>Creativity - Generation of ideas</u></b> Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology.</p> <p><b><u>Mechanisms and movement</u></b> A mechanism is a device that takes one type of motion or force and produces a different one. A mechanism makes a job easier to do. Mechanisms include sliders, levers, linkages, gears, pulleys and cams.</p> <p><b><u>Investigation</u></b> Different tools have characteristics that make them suitable for specific purposes. For example, scissors are used for cutting paper because they have sharp, metal blades that can cut through thin materials.</p>	<p><b>Key Knowledge:</b></p> <p><b><u>Everyday products</u></b> Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box.</p> <p><b><u>Staying safe</u></b> Electrical appliances must only be used under the supervision of an adult. Safety rules must also be followed when using electricity: fingers and other objects must not be put into electrical outlets, anything with a cord or plug should never be used around water and a plug should never be pulled out by its cord.</p> <p><b><u>Mechanisms and movement</u></b> Levers consist of a rigid bar that rotates around a fixed point, called a fulcrum. They reduce the amount of work needed to lift a heavy object. Sliders move from side to side or up and down, and are often used to make moving parts in books. Axles are shafts on which wheels can rotate to make a moving vehicle. Cams are devices that can convert circular motion into up-and-down motion.</p> <p><b><u>Electricity</u></b> An electric circuit can be used in a model, such as a lighthouse. It can be controlled using a switch</p> <p><b><u>Generation of ideas</u></b> Design criteria are the exact goals a project must achieve to be successful. These criteria</p>	<p><b>Key Knowledge:</b></p> <p><b><u>Everyday products</u></b> Design features are the aspects of a product's design that the designer would like to emphasise, such as the use of a particular material or feature that makes the product easier to use or more durable.</p> <p><b><u>Staying safe</u></b> Chemicals are used in the home every day. They include cleaning products, such as bleach and disinfectant, but also paints, glues, oils, pesticides and medicines. Most chemical products carry a hazard symbol showing in what way the chemical could be harmful. Chemicals should only be used under adult supervision. Appropriate safety precautions, such as wearing goggles and gloves, working in a well-ventilated room, wiping up spills and tying back long hair, should be taken.</p> <p><b><u>Processes</u></b> Mechanisms can be used to add functionality to a model. For example, sliders or levers can be used in moving pictures, storybooks or simple puppets; linkages in moving vehicles or puppets; gears in motorised vehicles or spinning toys; pulleys in cable cars or transport systems and cams in 3-D moving toys or pictures.</p> <p><b><u>Generation of ideas</u></b></p>

Different materials are suitable for different purposes, depending on their specific properties. For example, glass is transparent, so it is suitable to be used for windows. Fabric can be decorated using materials and small objects, such as buttons and sequins. Decorations can be attached to the fabric by gluing, stapling or tying.

**Food preparation and cooking**  
Using non-standard measures is a way of measuring that does not involve reading scales. For example, weight may be measured using a balance scale and lumps of plasticine. Length may be measured in the number of handspans or pencils laid end to end.

**Nutrition**  
Fruit and vegetables are an important part of a healthy diet. It is recommended that people eat at least five portions of fruit and vegetables every day.

**Origins of food**  
Some foods come from animals, such as meat, fish and dairy products. Other foods come from plants, such as fruit, vegetables, grains, beans and nuts.

**Comparison**  
Two products can be compared by looking at a set of criteria and scoring both products against each one.

**Evaluation**  
Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned.

**Materials**  
Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint.

**Food preparation and cooking**  
Some ingredients need to be prepared before they can be cooked or eaten. There are many ways to prepare ingredients: peeling skins using a vegetable peeler, such as potato skins; grating hard ingredients, such as cheese or chocolate; chopping vegetables, such as onions and peppers; and slicing foods, such as bread and apples.

**Nutrition**  
A healthy diet should include meat or fish, starchy foods (such as potatoes or rice), some dairy foods, a small amount of fat and plenty of fruit and vegetables.

**Origins of food**  
Food comes from two main sources: animals and plants. Cows provide beef, sheep provide lamb and mutton and pigs provide pork, ham and bacon. Examples of poultry include chickens, geese and turkeys. Examples of fish include cod, salmon and shellfish. Milk comes mainly from cows but also from goats and sheep. Most eggs come from chickens. Honey is made by bees. Fruit and vegetables come from plants. Oils are made from parts of plants. Sugar is made from plants called sugar cane and sugar beet. Plants also give us nuts, such as almonds, walnuts and hazelnuts.

might include the product's use, appearance, cost and target user.

**Structures**  
Shell structures are hollow, 3-D structures with a thin outer covering, such as a box. Frame structures are made from thin, rigid components, such as a tent frame. The rigid frame gives the structure shape and support. Diagonal struts can strengthen the structure

**Investigation**  
Specific tools can be used for cutting, such as saws. Wood can be joined using glue, nails, staples, or a combination of these. Safety rules must be followed to prevent injury from sharp blades. These rules include using a bench hook to keep the wood still, using a junior hacksaw with a pistol grip and working under adult supervision.

**Evaluation**  
Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model.

**Materials**  
Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost.

Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way.

**Structures**  
A prototype is a mock-up of a design that will look like the finished product but may not be full size or made of the same materials. Shell and frame structures can be strengthened by gluing several layers of card together, using triangular shapes rather than squares, adding diagonal support struts and using 'Jinks' corners (small, thin pieces of card cut into a right-angled triangle and glued over each joint to straighten and strengthen them).

**Investigation**  
Useful tools for cutting include scissors, craft knives, junior hacksaws with pistol grip and bench hooks. Useful tools for joining include glue guns. Tools should only be used with adult supervision and safety rules must be followed.

**Evaluation**  
Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. Evaluation also includes suggesting improvements and explaining why they should be made.

**Materials for purpose**  
Different materials and components have a range of properties, making them suitable for different tasks. It is important to select the correct material or component for the specific purpose, depending on the design criteria. Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season.

**Food preparation and cooking**  
Cooking techniques include baking, boiling, frying, grilling and roasting.

**Nutrition**

			<p>Healthy snacks include fresh or dried fruit and vegetables, nuts and seeds, rice cakes with low-fat cream cheese, homemade popcorn or chopped vegetables with hummus. A healthy packed lunch might include a brown or wholemeal bread sandwich containing eggs, meat, fish or cheese, a piece of fresh fruit, a low-sugar yoghurt, rice cake or popcorn and a drink, such as water or semi-skimmed milk.</p> <p><b>Comparison</b></p> <p>A comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored.</p>
<p><b>Key Skills:</b></p> <p><b>Everyday products</b> Name and explore a range of everyday products and describe how they are used.</p> <p><b>Mechanisms and movement</b> Use wheels and axles to make a simple moving model.</p> <p><b>Creativity - generation of ideas</b> Create a design to meet simple design criteria.</p> <p><b>Structures</b> Construct simple structures, models or other products using a range of materials.</p> <p><b>Investigation</b> Select the appropriate tool for a simple practical task.</p> <p><b>Evaluation</b> Talk about their own and each other's work, identifying strengths or weaknesses and offering support.</p> <p><b>Materials</b> Cut and join textiles using glue and simple stitches. Select and use a range of materials, beginning to explain their choices. Use gluing, stapling or tying to decorate fabric, including buttons and sequins.</p> <p><b>Food preparation and cooking</b> Measure and weigh food items using non-standard measures, such as spoons and cups.</p> <p><b>Nutrition</b> Select healthy ingredients for a fruit or vegetable salad.</p>	<p><b>Key Skills:</b></p> <p><b>Staying safe</b> Work safely and hygienically in construction and cooking activities.</p> <p><b>Mechanisms and movement</b> Use a range of mechanisms (levers, sliders, wheels and axles) in models or products.</p> <p><b>Electricity</b> <b>Create an operational, simple series circuit.</b></p> <p><b>Creativity - generation of ideas</b> <b>Generate and communicate their ideas through a range of different methods.</b></p> <p><b>Investigation</b> <b>Select the appropriate tool for a task and explain their choice.</b></p> <p><b>Evaluation</b> Explain how closely their finished products meet their design criteria and say what they could do better in the future.</p> <p><b>Materials</b> Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.</p> <p><b>Food preparation and cooking</b> Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.</p> <p><b>Nutrition</b> Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal.</p>	<p><b>Key Skills:</b></p> <p><b>Mechanisms and movement</b> Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products.</p> <p><b>Electricity</b> Incorporate a simple series circuit into a model.</p> <p><b>Creativity - generation of ideas</b> Develop design criteria to inform a design.</p> <p><b>Structures</b> Create shell or frame structures using diagonal struts to strengthen them.</p> <p><b>Investigation</b> Use tools safely for cutting and joining materials and components.</p> <p><b>Evaluation</b> Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.</p> <p><b>Materials</b> Plan which materials will be needed for a task and explain why.</p>	<p><b>Key Skills:</b></p> <p><b>Humankind</b> Investigate and identify the design features of a familiar product.</p> <p><b>Processes</b> Explore and use a range of mechanisms (levers, axles, cams, gears and pulleys) in models or products.</p> <p><b>Creativity</b> Use annotated sketches and exploded diagrams to test and communicate their ideas.</p> <p><b>Structures</b> Prototype shell and frame structures, showing awareness of how to strengthen, stiffen and reinforce them.</p> <p><b>Investigation</b> Select, name and use tools with adult supervision.</p> <p><b>Evaluation</b> Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making improvements.</p> <p><b>Materials</b> Choose from a range of materials, showing an understanding of their different characteristics.</p> <p><b>Food preparation and cooking</b> Identify and use a range of cooking techniques to prepare a simple meal or snack.</p> <p><b>Nutrition</b> Design a healthy snack or packed lunch and explain why it is healthy.</p>

	Identify the origin of some common foods (milk, eggs, some meats, common fruit and vegetables).		<b>Comparison</b> Create and complete a comparison table to compare two or more products.
<b>Key Vocabulary:</b> Select, design, rearrange, evaluate, taste, smell, texture, diet, measure, weigh, join, fabric, sequins, felt, buttons, beads, construction, wheels, axle, lever, slider, paper fastener, hole punch, staples, tube, vehicle	<b>Key Vocabulary:</b> Grate, peel, chop, hygienic, running stitch, ribbon, printing, axle, chassis, dowel, nets, braid, hinge, product	<b>Key Vocabulary:</b> <b>All terms from KS1 plus</b>  <b>KS2:</b> <b>Appearance, decoration, stitch, prototype, shell, frame, over sew, diagonal, strut, pop up, template, mock up</b>	<b>Key Vocabulary:</b> <b>Product, design criteria, linkages, levers, stability, applique, analyse, function, joining, finishing, shaping, components, mechanisms</b>