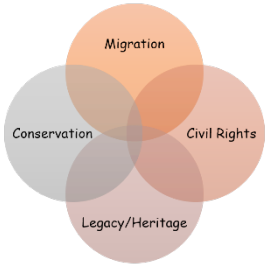
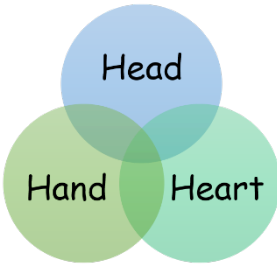
Riversdale Primary School

Design Technology Progression 2024





Disciplinary Concepts							
Designing	**Making**	**Evaluating**	**Cooking & Nutrition**	**Textiles**	**Structures**	**Mechanisms**	**Electrical Systems**

General Overview EYFS	
Nursery: Physical Development: • Choose the right resources to carry out their own plan. • Use one-handed tools and equipment, for example making snips in paper with scissors. • Use a comfortable grip with good control when holding pens and pencils. Expressive Arts & Design: • Explore different materials freely in order to develop their ideas about how to use them and what to make • Develop their own ideas and then decide which materials to use to explore them. • Join different materials and explore different textures • Use drawing to represent ideas like movement or loud noises.	Reception: Physical Development: • Develop their fine motor skills so that they can use a range of tools competently, safely and confidently. Expressive Arts & Design: • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills. ELG Fine Motor Skills: • Hold pencil effectively in preparation for fluent writing-using the tripod grip in almost all cases, • Use a range of small tools including scissors, paintbrushes, and cutlery. ELG Creating with Materials: • Safely use and explore a variety of materials, tools, techniques, experimenting with colour, design, texture, form, and function. • Share their creations, explain the process they have used.

Overview						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 1	**Textiles** Christmas Puppets		**Mechanisms** Sliders & Levers		**Cooking & Nutrition** Fruit Snacks	
Year 2	**Cooking & Nutrition** Picnic Pieces		**Structures** Photo Frames (Freestanding)		**Mechanisms** Wheels & Axles	
Year 3	**Mechanisms** Pneumatics		**Cooking & Nutrition** Oven Roasted Vegetables		**Textiles** Practical Pouches	
Year 4	**Structures** Protective Product Packaging (Shell)		**Cooking & Nutrition** Baking Breads		**Electrical Systems** Light up the Night	
Year 5	**Mechanisms** Cam Mechanism Toys		**Textiles** Classy Cushions		**Cooking & Nutrition** UK Summertime	
Year 6	**Cooking & Nutrition** Mediterranean Foods		**Electrical Systems** Microbit Control		**Structures** Playground Apparatus (Frame)	

Progression of Disciplinary Knowledge & Skills				
	EYFS	**KS1**	**LKS2**	**UKS2**
Designing	Explore different materials freely, in order to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them.	**Understanding Contexts, Users and Purposes:** Work within a range of contexts, e.g. imaginary, story-based, home, school, gardens, playgrounds, and the local community. State what products they are designing and making. Say whether their products are for themselves or other users. Describe what their products are for. Say how their products will work. Say how they will make their products suitable for their intended users. Use simple design criteria to help develop their ideas. **Generating, Developing, Modelling and Communicating Ideas:** Generate ideas by drawing on their own experiences. Use knowledge of existing products to help come up with ideas. Develop and communicate ideas by talking and drawing. Model ideas by exploring materials, components and construction kits and by making templates and mock-ups. Use information and communication technology, where appropriate, to develop and communicate their ideas.	**Understanding Contexts, Users and Purposes:** Work within a range of contexts, such as the home, school, leisure, local community, culture, and enterprise. Describe the purpose of their products. Indicate the design features of their products that will appeal to intended users. Explain how particular parts of their products work. Gather information about the needs and wants of particular individuals and groups. Develop their own design criteria and use these to inform their idea. **Generating, Developing, Modelling and Communicating Ideas:** Share and clarify ideas through discussion. Model their ideas using prototypes and pattern pieces. Use annotated sketches and cross-sectional drawings to develop and communicate their ideas. Generate realistic ideas, focusing on the needs of the user. Make design decisions that take account of the availability of resources.	**Understanding Contexts, Users and Purposes:** Work confidently within a range of contexts, such as the home, school, leisure, local community, culture, enterprise, industry and the wider environment. Clearly describe the purpose of their products. Indicate the design features of their products that will appeal to intended users, with clear reasoning. Explain how particular parts of their products work. Carry out research, using surveys, interviews, questionnaires and web-based resources. Identify the needs, wants, preferences and values of particular individuals and groups. Develop a simple design specification to guide their thinking. **Generating, Developing, Modelling and Communicating Ideas:** Share and clarify ideas through discussion. Model their ideas using prototypes and pattern pieces. Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas. Use computer-aided design to develop and communicate their ideas. Generate innovative ideas, drawing on research. Make design decisions, taking account of constraints such as time, resources and cost.

Making	Join different materials and explore different textures. Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	**Planning:** Plan by suggesting what to do next. Select from a range of tools and equipment, explaining their choices. Select from a range of materials and components according to their characteristics. **Practical Skills & Techniques:** Follow procedures for safety and hygiene. Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components. Measure, mark out, cut and shape materials and components. Assemble, join and combine materials and components. Use finishing techniques, including those from art and design (where applicable).	**Planning:** Select tools and equipment suitable for the task. Begin to explain their choice of tools and equipment in relation to the skills and techniques they will be using. Select materials and components suitable for the task. Begin to explain their choice of materials and components according to functional properties and aesthetic qualities. Order the main stages of making. **Practical Skills & Techniques:** Follow procedures for safety and hygiene. Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. Measure, mark out, cut and shape materials and components with some accuracy. Assemble, join and combine materials and components with some accuracy. Apply a range of finishing techniques, including those from art and design, with some accuracy.	**Planning:** Select tools and equipment suitable for the task. Confidently explain their choice of tools and equipment in relation to the skills and techniques they will be using. Select materials and components suitable for the task. Confidently explain their choice of materials and components according to functional properties and aesthetic qualities. Produce appropriate lists of tools, equipment and materials that they need. Formulate step-by-step plans as a guide to making. **Practical Skills & Techniques:** Follow procedures for safety and hygiene. Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. Accurately measure, mark out, cut and shape materials and components. Accurately assemble, join and combine materials and components. Accurately apply a range of finishing techniques, including those from art and design. Use techniques that involve a number of steps. Demonstrate resourcefulness when tackling practical problem.

Evaluating	Share creations, explaining the process they have used.	**Own Ideas & Products:** Talk about their design ideas and what they are making. Make simple judgements about their products and ideas against design criteria. Suggest how their products could be improved. **Existing Products:** Discuss: • what products are, • who products are for, • what products are for, • how products work, • how products are used, • where products might be used, • what materials products are made of, • what they like and dislike about products.	**Own Ideas & Products:** Identify the strengths and areas for development in their ideas and products. Consider the views of others, including intended users, to improve their work. Refer to their design criteria as they design and make. Use their design criteria to evaluate their completed products. **Existing Products:** Discuss: • how well products have been designed, • who designed and made the products, • where products were designed and made, • when products were designed and made, • whether products can be recycled or reused, • how well products have been made, • why materials have been chosen, • what methods of construction have been used, • how well products work, • how well products achieve their purposes, • how well products meet user needs and wants.	**Own Ideas & Products:** Identify the strengths and areas for development in their ideas and products, making clear links to the design criteria. Consider the views of others, including intended users, to improve their work, making clear links to the design criteria. Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. Evaluate their ideas and products against their original design specification. **Existing Products:** Discuss: • how well products have been designed, • how much products cost to make, • how innovative products are, • how sustainable the materials in products are, • what impact products have beyond their intended purpose, • how well products have been made, • why materials have been chosen, • what methods of construction have been used, • how well products work, • how well products achieve their purposes, • how well products meet user needs and wants.

Technical Knowledge & Skills							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Cooking & Nutrition	Begin developing a food vocabulary using taste, explaining qualities such as sweet, sour, salty. Begin to develop safe and hygienic practices around food, including washing hand before eating. Begin to identify healthy vs. less healthy foods. Begin to measure food items using non-statutory measures e.g. spoons, cups. Begin to use child safe tools for cutting soft fruits.	Begin to develop a sensory food vocabulary using taste, smell, texture and feel. Name and group familiar fruits and vegetables. Understand the need for a variety of fruits and vegetables in a healthy diet. Begin to develop an understanding of where food comes from (growing). Begin to recognise how food comes from the source to our plates with a focus on fruits and vegetables. Know that working safely and hygienically involves washing hands before and after touching food. Peel and cut a range of fruits and/or vegetables. Begin to develop safe cutting techniques using the bridge hold. Measure and weigh food items, non-statutory measures e.g. spoons, cups.	Continue to develop a sensory food vocabulary using taste, smell, texture and feel. Begin to develop an understanding that some foods are reared or caught. Continue to build on understanding of how food comes from the source to our plates, with a focus on meat. Expand understanding of food groups, identifying the importance of carbohydrates, proteins and fats in a healthy and balanced diet. Explore the eat well plate and how the different parts of a meal fit into the section of the plate. Working safely and hygienically by washing hands before and after touching food. Cut, peel, grate, slice and chop a range of ingredients. Continue to develop safe cutting techniques using the bridge hold and claw grip.	Apply appropriate vocabulary when analysing the taste, texture, smell and appearance of a range of foods, with support. Begin to learn which foods are specifically grown, reared and caught in the UK. Identify that different parts of a plant can be eaten, including the root, tuber, stem, leaf, fruit and flower. Make healthy eating choices using the Eatwell plate when planning a dish. Follow instructions/recipes and begin to make appropriate adaptations. Join and combine a range of ingredients. Develop simple cooking techniques: roasting. Build on established safe and hygienic practices by also using aprons and tying back long hair. Understand the importance of using different cutting	Apply appropriate vocabulary when analysing the taste, texture, smell and appearance of a range of foods, with minimal support. Build on understanding of fruits and vegetables grown in the UK, making links to how the climate enables them to thrive. Explore food sustainability. Apply the full range of safe and hygienic cooking practice previously learnt. Understand that food poisoning/foodborne illnesses can occur if safe and hygienic practices are not followed. Build on prior learning to understand the importance of using different cutting boards for salad vegetables (green), cooked meat (yellow) and bread/dairy (white) to avoid cross contamination. Cut, peel, grate, slice, chop, and whisk a range of ingredients.	Continue to build on understanding of fruits and vegetables grown in the UK, exploring the concept of seasonality. Identify foods for different seasons in the UK. Know that foods are often processed into ingredients that can be eaten or used in cooking. Investigate different processing procedures. Continue to apply the full range of safe and hygienic cooking practice previously learnt. Select the correct cutting board for the selected ingredient. Select, design and prepare healthy and savoury foods for a particular purpose. Confidently follow instructions/recipes, making appropriate adaptations to suit a given purpose. Accurately weigh and measure ingredients with minimal support.	Exploring how UK diets have changed as a result of food imports, including the impact on seasonality. Understanding that some foods are imported/exported. Identify benefits and limitations of importing and exporting foods. Identify common foods imported from mainland Europe. Identify how foods are preserved in preparation for export. Recognise that foods have “miles” and that some common foods eaten have very high mileage. Continue to apply the full range of safe and hygienic cooking practice previously learnt. Select the correct cutting board for the selected ingredient. Select, design and prepare healthy and savoury foods for a particular purpose.

			Follow simple instructions/recipes. Continue to measure and weigh food items, non-statutory measures e.g. spoons, cups.	boards for raw meat (red) and salad vegetables (green). Cut, peel, grate, slice and chop a range of ingredients. Develop more confidence with cutting/chopping techniques (bridge hold and claw grip).	Confidently apply cutting/chopping techniques (bridge hold and claw grip). Follow instructions/recipes, making appropriate adaptations. Join and combine a range of ingredients to personalise a savoury dish. Begin to accurately weigh and measure ingredients. Develop simple cooking techniques: kneading and baking. Recognise the importance of the use of yeast and proving in creating light textures in bread.	Cut, peel, grate, slice, chop, whisk and/or mix a range of ingredients. Confidently apply cutting/chopping techniques (bridge hold and claw grip). Develop simple cooking techniques: barbecuing/grilling.	Confidently follow instructions/recipes, making appropriate adaptations to suit a given purpose. Accurately weigh and measure ingredients with minimal support. Cut, peel, grate, slice, chop, whisk and/or mix a range of ingredients. Confidently apply cutting/chopping techniques (bridge hold and claw grip). Develop simple cooking techniques: frying.
Textiles	Explore different materials freely, in order to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures. Safely use and explore a variety of materials,	Begin to use appropriate vocabulary to refer to fabrics and tools. Know that fabrics are materials used to create things like clothes and toys. Identify that common fabric types include cotton, wool, and felt. Understand that felt is a thick and sturdy fabric, ideal for crafting.		Continue to use appropriate vocabulary for tools, materials and their properties. Understand the importance of seam allowance. Define the term pattern/template, including its use. Begin to use pattens to fabric to support with accurate cutting.		Confidently use appropriate vocabulary for tools, materials and their properties. Create 3D products using pattern pieces and seam allowance. Decorate textiles appropriately often before joining components. Recognise that stitches can be decorative as well as functional.	

	tools and techniques, experimenting with colour, design, texture, form and function. Share creations, explaining the process they have used. Make use of props and materials when role playing characters in narratives and stories.	Recognise that tools used in textiles include scissors and needles, which should always be handled safely. Cut out shapes which have been created by drawing round a template onto the fabric. Know that a 3D textiles product can be assembled from two identical fabric shapes. Join fabrics using simple methods e.g. running stitch, glue, staples. Decorate fabrics with attached items, e.g. buttons, beads, sequins, braids, ribbons. Colour fabrics using a range of techniques, e.g. fabric pens, fabric paints, printing.		Understand that joining fabric securely and neatly is important for the product to stay together. Apply a range of stitch methods, e.g. running stitch, backstitch, overstitch and/or blanket stitch. Sew on buttons and make loops. Apply appropriate decoration techniques based on prior/new learning.		Use a range of decorative features, e.g. eyelets, buttons, toggles, embroidery or applique. Pin and tack fabric pieces together, considering seam allowance. Join fabrics using over sewing, back stitch, blanket stitch or machine stitching (closer supervision). Combine different fabrics to improve functionality or aesthetics.	
Structures	Explore different materials freely, in order to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them.		Refer to materials, tools and techniques using appropriate vocabulary. Know that freestanding structures stand on their own foundation or base without attachment to anything else.		Continue to use appropriate vocabulary for tools, materials and their properties. Recognise that shell structures are hollow structures made from a thin outer layer. Identify that shell structures are often used for protection.		Confidently use appropriate vocabulary for tools, materials and their properties. Recognise that frame structures combine beams, columns and slabs to resist heavy loads/compression. Experiment with different techniques

	Join different materials and explore different textures. Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share creations, explaining the process they have used.		Begin to understand the concept of centre of gravity and how this impacts a structure's stability. Test different methods of enabling structures to remain stable. Make structures more stable by giving them a wide base. Know that the weight of the structure needs to be evenly spread on the base to make it secure. Join materials by selecting appropriate methods to ensure strength and stability, e.g. glue, tape etc.		Create simple 3D shell structures using 2D nets. Investigate ways of strengthening a shell structure. Strengthen a shell structure through laminating, corrugating or ribbing. Select materials to develop a chosen idea based on design decisions.		for constructing simple frame structures. Investigate ways of strengthening a frame structure, including struts. Investigate ways of strengthening joints, including gusset plates. Select appropriate materials to develop a chosen idea giving clear reasoning in relation to the intended purpose. Apply the concept of triangulation to increase rigidity of a frame structure.
Mechanisms	N/A	Refer to materials, tools and techniques using appropriate vocabulary. Identify simple levers and sliders in context, e.g. story books, and explain how they work. Use correct vocabulary to describe slider and level mechanisms and how they move, e.g. pivots, slots, etc. Draw simple products to show how they work using directional arrows.	Refer to materials, tools and techniques using appropriate vocabulary. Identify wheels and axles in context, e.g. skateboard or wheelbarrows, and explain how they work. Use correct vocabulary to describe wheels and axles and how they move, e.g. free and fixed axles. Explore how different size wheels and axle placement affect movement.	Continue to use appropriate vocabulary for tools, materials and their properties. Identify familiar objects that use air to make them work. Describe how objects use air to make them work. Explain that simple pneumatic systems work by using pressurised air to create motion.		Confidently use appropriate vocabulary for tools, materials and their properties. Identify familiar objects that use cams mechanisms to make them work. Explain how simple cams mechanisms work using appropriate vocabulary e.g. input and output. Recognise that cam mechanisms consist of a crank, follower, cam, frame and axle.	

		With some support make and assemble strips of cards to make sliders and lever mechanisms. Choose and use a given technique to make a simple slider or lever mechanism to be used in a product. Use tools and equipment safely, e.g. split pins and hole punch.	Recognise that friction can impact the movement of the wheel. Use class construction kits with some support to construct free and/or fixed axle vehicles.	Understand that mechanical systems have an input, process and an output. Know that the input is the pressure and the output is the air that results in mechanical outcome. Explain why pneumatic systems must have airtight connections. Create effective pneumatic systems using appropriate materials. Investigate ways of using a pneumatic system in combination with other materials to create a product.		Experiment with different cam shapes and how these affect movement. Create effective cam mechanisms for movement such as rotation and oscillation. Know that the crank uses a circular motion to create a reciprocating linear movement. Investigate ways of using cam mechanisms in combination with other materials to create a product.	
Electrical Systems					Continue to use appropriate vocabulary for tools, materials and their properties. Recognise that an electric power system is a network of components deployed to supply, transfer, and use electric power. Recognise that lights are controlled by a switch. Explore the range of different switches that can be used to control a circuit, e.g. push-to-		Confidently use appropriate vocabulary for tools, materials and their properties. Identify products that use computer programming to function. Know that microcontrollers can be used in a range of products as they are small and can be programmed to perform specific functions. Experiment with microcontrollers,

					make or push-to-break switches. Create a variety of switches e.g. using paperclips, coins and/or foil. Draw on understanding of simple electrical circuits and switches to generate design ideas. Build electrical systems, making secure connections, for a desired outcome.		exploring a range of inputs and outputs which can be applied to a given scenario e.g. an alarm or a game. Develop a sequence of steps to be used as a control programme based on a design brief. Build electrical systems, using control programmes, for a desired outcome.