Design and Technology – Long Term Plan

Dallam Community Primary School

Year Group	Autumn		Spring		Summer	
Y1	**Mechanisms: Wheels and Axles**	**Textiles: Puppets**	**Mechanisms: Moving Story Book**	**Cooking and Nutrition: Smoothies**	**Structures: Constructing windmills**	
	Learn about the key parts of a wheeled vehicle, to develop an understanding of how wheels, axles and axle holders work. Design and make a moving vehicle.	Explore methods of joining fabric. Design and make a character-based hand puppet using a preferred joining technique, before decorating.	Explore slider mechanisms and the movement they output, to design, make and evaluate a moving storybook from a range of templates.	Learn to distinguish between fruit and vegetables and where they grow. Design a fruit and vegetable smoothie and accompanying packaging.	Inspired by the song, 'Mouse in a windmill', design and construct a windmill for a client (mouse) to live in. Explore various types of windmill, how they work and their key features	
Y2	**Structures: Baby Bear's Chair**	**Mechanisms: Moving Monster**	**Mechanisms: Fairground Wheel**		**Textiles: Pouches**	**Cooking and Nutrition: A balanced diet**
	Explore stability and methods to strengthen structures, to understand Baby Bear's chair weaknesses and develop an improved solution for him to use.	Explore levers, linkages and pivots through existing products and experimentation, use this research to construct and assemble a moving monster.	Design and create a functional Ferris wheel, learn how different components fit together so that the wheel rotates and the structure stands freely.		Learn how to sew a running stitch ready to design, make and decorate a pouch using a template.	Learn about the food groups (carbohydrates, proteins, fruits and vegetables, dairy, oils and spreads) to understand a balanced diet to develop a healthy wrap

Y3	**Textiles: Cushions**		**Structures: Constructing a Castle**	**Digital World: Wearable Technology**	**Cooking and Nutrition: Eating Seasonally**	**Mechanical Systems: Pneumatic Toys**
	Learn and apply two new sewing techniques – cross-stitch and applqué.		Identify and learn about the key features of a castle, before designing and making a recycled-material castle (structure).	Design, develop a program, house and promote a Micro:bit electronic charm to use in low-light conditions.	Learn about various fruits and vegetables, and when, where and why they are grown in different seasons. Discover the relationship between colour and health benefits.	Explore pneumatic systems, then apply this understanding to design and make a pneumatic toy including thumbnail sketches and exploded diagrams.
Y4	**Mechanical Systems: Slingshot Car**	**Textiles: Fastenings**	**Structures: Pavilions**	**Cooking and Nutrition: Adapting a recipe**	**Electrical Systems: Torches**	
	Using a range of materials, design and make a car with a working slingshot mechanism and house the mechanism using a range of nets.	Analyse and evaluate a range of existing fastenings, then devise a list of design criteria to design, generate templates and make.	Investigate and model frame structures to improve their stability, then apply this research to design and create a stable, decorated pavilion.	Work in groups to adapt an existing biscuit recipe, whilst taking into account the cost of the ingredients and other expenses against a set budget.	Identify the difference between electrical and electronic products. Evaluate a range of existing torches and their features, then develop a new functional torch design.	

Y5	**Structures: Bridges**	**Mechanical Systems: Pop-up Book**	**Cooking and Nutrition: Developing a recipe**		**Electrical Systems: Doodlers**	**Digital World: Monitoring devices**
	Test and analyse various types of bridge to determine their strength and stability. Explore material properties and sources, before marking, sawing and assembling a wooden truss bridge. **Fab Lab** **Making a bird box**	Create a functional four-page pop-up storybook design, using lever, sliders, layers and spacers to create paper-based mechanisms.	Discover the farm to fork process, understand the key welfare issues for rearing cattle. Compare the nutritional value of existing sauces and develop a healthier recipe.		Explore how the design cycle can be approached at a different starting point, by investigating an existing product, which uses a motor, to encourage pupils to problem-solve and work out how the product has been constructed, ready to develop their own.	Apply Computing knowledge and understanding to program a Micro: bit animal monitoring device. Develop 3D CAD skills by learning how to navigate the Tinkercad interface and essential tools to combine multiple objects.
Y6	**Cooking and Nutrition: Come dine with me**	**Structures: Playgrounds**	**Mechanical Systems: Automata Toys**	**Electrical Systems: Steady hand game**	**Digital World: Navigating the World**	
	Develop a three-course menu focused on three key ingredients, as part of a paired challenge to develop the best class recipes. Explore each key ingredient's farm to fork process.	Research existing playground equipment and their different forms, before designing and developing a range of apparatus to meet a list of specified design criteria.	Develop a functional automata window display, to meet the requirements in a design brief. Explore and create cam, follower and axle mechanisms to mimic different movements.	Understand what is meant by fit for purpose design and form follows function. Design and develop a steady hand game using a series circuit, including housing and backboard.	Design and program a navigation tool to produce a multifunctional device for trekkers using CAD 3D modelling software. Pitch and explain the product to a guest panel.	