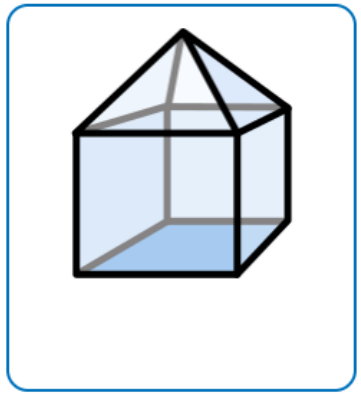
Knowledge Progression – Design & Technology

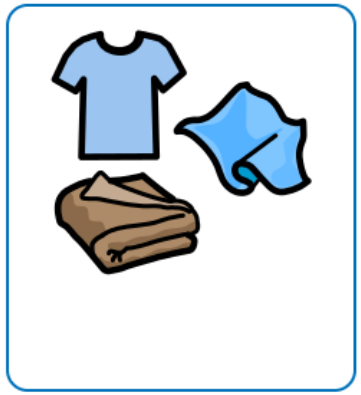
At Owston Park Primary Academy, our Design and Technology curriculum is organised around the key substantive concepts of Mechanisms and Structures, Materials and Textiles, Cooking and Nutrition, and the Design Process. These concepts provide a framework through which pupils develop creativity, resilience and practical problem-solving skills. Pupils explore how products are designed for a purpose, how materials can be manipulated and combined to create effective outcomes, how structures and mechanisms function, and how food can be prepared safely as part of a healthy lifestyle. These concepts are carefully sequenced, revisited and deepened over time, enabling pupils to build secure and connected design and technology knowledge.

Alongside this, pupils develop their disciplinary knowledge through Working Creatively and Evaluatively in Design and Technology, learning to generate and develop ideas, master practical techniques, and evaluate products against a purpose and user need. Through designing, making and refining products, pupils learn to think and work as designers, engineers, craftspeople and chefs by applying technical knowledge, solving problems and improving their creations through testing and evaluation.

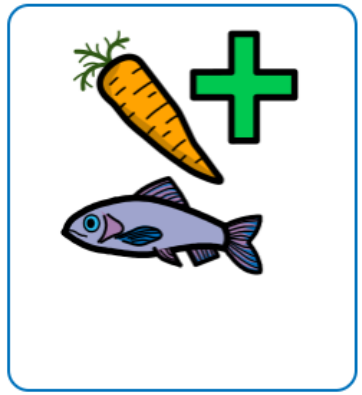
Our DT Concepts



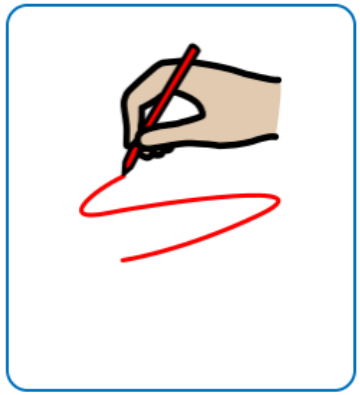
Mechanisms & Structures
How products are constructed and how mechanisms create movement and function.



Materials & Textiles
How materials are selected, combined and manipulated to create effective products.



Cooking & Nutrition
How food can be prepared safely and contribute to a healthy lifestyle.



Design Process
How products are planned, created, tested and improved to meet a purpose.

Knowledge Progression – Design & Technology

	Key Concepts Covered	Vocabulary	Substantive Knowledge	Disciplinary Knowledge
EYFS	Mechanisms and Structures; Materials and Textiles; Cooking and Nutrition; Design Process	build, construct, create, cut, design, food, join, make, material, model, shape, structure, strong, tool	Children explore how products are designed and made through play, investigation and first-hand experiences. They learn that different materials have different purposes, that structures can be built and strengthened in different ways and that food can be prepared safely. They begin to understand that products are designed to meet a need and can be improved.	Explore and investigate materials, structures and products. Generate simple ideas and select resources for a purpose. Use basic tools and techniques safely. Construct, join and adapt materials to create products. Talk about finished products and suggest improvements. Explore food preparation safely and hygienically.
Y1	Mechanisms and Structures; Cooking and Nutrition; Design Process	axle, chassis, design, evaluate, fruit, healthy, join, mechanism, movement, product, recipe, structure, test, vehicle, wheel	Children understand that products are designed for a purpose and created using a range of materials and techniques. They know that structures can be made stronger through design and that mechanisms such as wheels and axles create movement. They understand that food can be prepared safely and that ingredients can be selected to create healthy products.	Generate ideas through discussion, drawing and templates. Select and use appropriate materials and simple tools. Construct structures and products using joining techniques. Explore mechanisms such as wheels and axles. Prepare simple foods safely and hygienically. Evaluate products against simple design criteria and suggest improvements.
Y2	Mechanisms and Structures; Materials and Textiles; Cooking and Nutrition; Design Process	axle, design criteria, evaluate, ingredients, join, mechanism, pizza, puppet, purpose, running stitch, structure, template, textile, user, wheel	Children understand that products are designed to meet the needs of a user and purpose. They know that textiles can be joined using simple sewing techniques and that structures can be strengthened using appropriate materials. They understand that food products contain ingredients with different nutritional properties and that recipes can be adapted.	Generate ideas and design products for a specific user. Select and manipulate textiles, structures and food ingredients. Use simple sewing, cutting, joining and shaping techniques accurately. Evaluate products against design criteria and identify improvements. Refine designs using testing and feedback.
Y3	Mechanisms and Structures; Cooking and Nutrition; Design Process	catapult, design specification, evaluate, ingredient, lever, mechanism, nutrition, prototype, reinforce, roundhouse, seasonal,	Children understand that structures and mechanisms are designed to solve problems and meet specific purposes. They know that structures can be reinforced to improve strength and stability and that levers create movement. They understand the importance of selecting appropriate materials and techniques and know that	Research and develop design ideas for a purpose and audience. Use a wider range of tools, materials and techniques accurately. Build and test structures and simple mechanisms.

		structure, target user, technique	food products should be designed with nutritional value and user needs in mind.	Prepare and cook food safely using a range of ingredients. Evaluate effectiveness, functionality and appearance and refine products using feedback.
Y4	Mechanisms and Structures; Cooking and Nutrition; Design Process	design criteria, dough, evaluate, ingredients, mechanism, nutrition, prototype, pulley, reinforce, Roman, structure, support, trench, user, yeast	Children understand that structures can be designed and reinforced to improve strength and effectiveness. They know that mechanisms such as pulleys transfer force and make tasks easier. They understand how products develop through designing, testing and modification and know that food preparation involves specific techniques and nutritional understanding.	Develop detailed designs that respond to design criteria. Select and use appropriate materials, tools and construction techniques. Build and test structures and mechanisms. Apply food preparation and cooking techniques safely. Evaluate products against success criteria and make informed improvements.
Y5	Mechanisms and Structures; Materials and Textiles; Cooking and Nutrition; Design Process	cam, circuit, design specification, electrical system, evaluate, ingredients, mechanism, nutrition, prototype, seam, sewing, soup, textile, toy, user	Children understand that products can combine textiles, structures, mechanisms and electrical systems to achieve a purpose. They know that cams and mechanical systems create movement and that textiles can be strengthened and joined using increasingly sophisticated techniques. They understand that food products should be designed with nutritional value and user needs in mind and that prototypes are used to develop and improve products.	Generate, model and communicate design ideas effectively. Use a broad range of materials, textiles, mechanisms and electrical components. Construct, test and refine products using feedback and evaluation. Apply increasingly complex cooking and food preparation skills. Evaluate products critically against design specifications and user needs.
Y6	Mechanisms and Structures; Materials and Textiles; Cooking and Nutrition; Design Process	bridge, evaluate, function, ingredients, mechanism, nutrition, prototype, seam allowance, specification, stability, strength, structure, textile, user	Children understand that successful products are developed through an iterative design process involving planning, testing, evaluation and refinement. They know how structures are strengthened to meet a specific purpose and user need, how textiles are manipulated using increasingly complex techniques and how food products can be planned and prepared to meet nutritional requirements.	Independently generate and develop design ideas. Select and apply appropriate materials, tools and techniques with accuracy. Construct, test and refine complex products. Apply a wide range of cooking and food preparation techniques safely. Critically evaluate products against design specifications, functionality and user needs, making justified improvements.

Concept development over time

Key Focus	 Mechanisms & Structures	 Materials & Textiles	 Cooking & Nutrition	 Design Process
EYFS Technology Exploration				
Y1 Vehicles	Wheels, axles and movement.	Selecting and joining materials.		Designing, making and evaluating a moving product.
Y1 Time Machines	Simple structures and strengthening techniques.	Exploring suitable materials.		Designing and evaluating a structure.
Y1 Fruit Kebabs			Food preparation and healthy ingredients.	Designing and evaluating a food product.
Y2 Puppets		Textiles, templates and joining fabric.		Designing, making and evaluating for a user.
Y2 Castles	Structures and stability.	Selecting appropriate materials.		Designing and refining a structure.
Y2 Pizza			Nutrition, ingredients and food preparation.	Designing and evaluating a recipe.
Y3 Roundhouses	Structures, reinforcement and historical building techniques.	Selecting and combining materials.		Designing and evaluating structures.

Y3 Catapults	Levers, mechanisms and movement.	Choosing materials for function.		Designing, testing and improving mechanisms.
Y3 Cottage Pie			Nutrition, ingredients and cooking techniques.	Designing and evaluating food products.
Y4 WWI Trenches	Structures, support and reinforcement.	Exploring appropriate materials.		Designing and evaluating structures against criteria.
Y4 Rampaging Romans	Pulleys and mechanical systems.			Designing, constructing and evaluating mechanisms.
Y4 Bread			Baking, nutrition and food preparation.	Designing and evaluating recipes.
Y5 Sewing/Electronics Project		Textiles, sewing, joining techniques and electrical systems.		Designing and evaluating products for a user.
Y5 Victorian Toys	Cams, movement and mechanical systems.	Selecting appropriate materials.		Designing, testing and refining products.
Y5 Soup			Nutrition, food preparation and healthy choices.	Designing and evaluating recipes.
Y6 Coin Purse		Textiles, sewing and product construction.		Designing and evaluating for a specific user and purpose.
Y6 Bridges	Strength, stability and structural engineering.	Selecting materials based on function.		Testing, evaluating and refining structural designs.
Y6 Afternoon Tea			Food preparation, nutrition and presentation.	Designing, producing and evaluating a final food product.