INSPIRE

CURRICULUM

Design & Technology

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Intent

Inspire Academy Trust aims to inspire pupils to be 'inspired designers and engineers' through facilitating innovative and creative thinkers who have an appreciation for the product design cycle through the ideation, creation and evaluation. We want pupils to develop the confidence to take risks, through drafting design concepts, modelling, and testing and to be reflective learners who evaluate their work and the work of others. Through our curriculum we aim to build an awareness of the impact of the design and technology on our lives and encourage pupils to become resourceful, enterprising citizens who will have the skills to contribute to the future design advancements.

Cooking, Food and Nutrition feature in the Autumn term at the beginning of every year group. This is because we want to ensure our children are well-informed about the foods they eat. We want to foster healthy habits and positive relationships with food for our pupils.

Breadth of Study

The following is the breadth of study that our pupils will cover from Year One through to Year Six. All statutory requirements taken from the National Curriculum are included, and some of the content has been supported by Kapow Primary – Videos, additional planning and resources to support units can be found on www.kapowprimary.com, accessed only using allocated username and passwords.

Key Stage 1	Key Stage 2
Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts, such as the home and school, gardens and playgrounds, the local community, industry and the wider environment. When designing and making, pupils should be taught to: **Design** design purposeful, functional, appealing products for themselves and other users based on design criteria. generate develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. **Make** select from and use a range of tools and equipment to perform practical tasks such as cutting, shaping, joining and finishing. select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. **Evaluate** explore and evaluate a range of existing products. evaluate their ideas and products against design criteria. **Technical knowledge** build structures, exploring how they can be made stronger, stiffer and more stable. explore and use mechanisms, such as levers, sliders, wheels and axles, in their products. **Cooking and nutrition** use the basic principles of a healthy and varied diet to prepare dishes. understand where food comes from.	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. When designing and making, pupils should be taught to: **Design** use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. **Make** select from and use a wider range of tools and equipment to perform practical tasks, such as cutting, shaping, joining and finishing, accurately. select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. **Evaluate** investigate and analyse a range of existing products. evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. understand how key events and individuals in design and technology have helped shape the world **Technical knowledge** apply their understanding of how to strengthen, stiffen and reinforce more complex structures. understand and use mechanical systems in their products, such as gears, pulleys, cams, levers and linkages. understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs, buzzers and motors. apply their understanding of computing to programme, monitor and control their products. **Cooking and nutrition** understand and apply the principles of a healthy and varied

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Whole School Coverage

The following grid shows the coverage of D&T units across the Primary age range at our school. Each unit has been carefully and progressively planned to build upon pupil's knowledge of Design & Technology.

	Autumn Term	Spring Term	Summer Term
Year 1	Cooking & Nutrition Fruit & Vegetables: Making Smoothies	Mechanisms Wheels & axels	Structures Windmills
Year 2	Cooking & Nutrition A Balanced Diet: Making wraps	Structures Design & Make a chair for a toy	Textiles Pouches
Year 3	Cooking & Nutrition Eating Seasonally: Savoury Tarts	Mechanisms Pneumatic toys	Textiles Cushions
Year 4	Cooking & Nutrition Adapting a Recipe: Making biscuits	Mechanisms Slingshot Cars	Electrical systems Torches
Year 5	Cooking & Nutrition What could be Healthier? Making Bolognese sauce	Structures Bridges	Textiles Stuffed Toys
Year 6	Cooking & Nutrition Come Dine with Me Design & Make a 3-course Meal	Mechanisms Automata Toys	Electrical Systems Steady hand Games

Design & Technology

		KS1						LKS2						UKS2					
		Year 1			Year 2			Year 3			Year 4			Year 5			Year 6		
Design & Tech Concepts/ skills	**Knowledge Categories**	**Fruit & Vegetables**	**Wheels & Axels**	**Windmills**	**A Balanced Diet**	**Making a chair**	**Pouches**	**Eating Seasonally**	**Pneumatic Toys**	**Cushions**	**Adapting a Recipe**	**Slingshot Cars**	**Torches**	**What could be healthier?**	**Bridges**	**Stuffed toys**	**Come Dine with me**	**Automata Toys**	**Steady Hand Games**
Design, Make, Evaluate & Technical Knowledge all run through each unit; with cooking and nutrition as the focus of one unit per year.	Cooking & Nutrition	■			■			■			■			■			■		
	Mechanisms		■						■			■						■	
	Structures			■		■									■				
	Textiles						■			■						■			
	Electrical Systems												■						■

Design & Technology Learning Journey

Early Years

Skills:

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Year 1

Cooking & Nutrition: Fruit & Veg- Making Smoothies
Chop safely, identify fruit/veg, how F&V grow, tasting, evaluating, describing senses, grouping in different ways

Mechanisms: Wheels & Axels
Design vehicle – wheels, axels, axle holders, label drawings, adapt mechanisms, test finished product, explain how to fix, understand how wheels work, discuss audience

Structures: Windmills
Importance of clear design criteria, make stable structure from card, glue and tape, describe purpose of structures, understand cylinders are strong structures, understand wind powers turbines and machines inside

Year 2

Cooking & Nutrition: Balanced Diet -Making Wraps
Design healthy wrap – food combinations, slice safely use bridge/claw grip, describe taste, texture, smell, test food combinations, test final product, info on label, evaluate effective grip, understand balanced diet, nutritional info on packaging, 5 food groups

Structures: Design & make a chair
Sketch & model to communicate design, know different types of structures, natural and everyday objects, make structure – criteria, create joints/structures from paper/card, tape. Explore features of structures, compare stability of shapes, test strength, stiffness, identify man-made/natural structures, legs, flat bases more effective? Know materials can be manipulated for strength

Textiles: Pouches
Design pouch, select, cut fabrics, decorate with fabric glue, thread needle, sew running stitch, pin/cut fabric, troubleshoot scenarios, evaluate quality of own/others' work

Year 3

Cooking & Nutrition: Eating Seasonally – savoury tarts
Create healthy, nutritious recipe, use seasonal ingredients, consider taste, texture, smell, appearance Basics food contamination rules, prepare workspace, follow recipe. Climate affects growth, safe/hygienic cooking equipment, environment impacted from imports

Mechanisms: Pneumatic Toys
Understand how pneumatic systems work, design toy using system, thumbnail sketches/exploded diagrams, select materials, manipulate materials using cutting, creasing, folding, weaving to create effects, test and modify outcome, know that pneumatic systems force air over distance to create movement

Textiles: Cushions
Learn to sew cross stitch and applique, design product and its template, follow design criteria, select and cut fabrics, sew cross stitch to join fabric, use applique to decorate fabric, use stuffing and sew edges, evaluate end product, thread needle, tie knot, know fabric can be layered for effect

Year 4

Cooking & Nutrition: Adapt a recipe – make biscuits
Design biscuit with budget, follow recipe, safety, hygiene, adapt recipe, evaluate – consider taste, texture, smell, appearance, impact of budget on end result, evaluate products, suggest modifications, understand environmental impact on cost of ingredients

Mechanisms: Slingshot Cars
Design shape to reduce air resistance, draw nets, design shape to increase/decrease speed, measure, cut, mark, assemble – increasing accuracy, evaluate speed, consider effect of shape on speed, know products evolve over time, moving things have kinetic energy

Electrical Systems: Torches
Design torch, target audience, create design and success criteria, make electrical circuit and switch, cut and attach materials using appropriate tools, evaluate electrical products, test final product, take inspiration from peers' work, conductors & insulators, understand batteries power, + and –s about different torches

Year 5

Cooking & Nutrition: What could be healthier – Making Bolognese
Adapt recipe, understand nutritional value of recipe alters if ingredients changed, write amended method, design appealing packaging, cut, prepare veg safely, use equipment safely (knives, hot pans, hobs), avoid cross contamination, follow recipe, identify nutritional differences, describe healthy benefits of food groups, understand where food comes from, balanced diet, adapt recipe to make healthier, compare two adapted recipes – identify healthiest

Structures: Bridges
Design stable structure to support weight, create frame with triangulation, different shaped beam bridges, wooden bridge, measure and mark wood, select tools use techniques to saw safely, identify requirement of reinforcement, use card corners, adapt/improve, suggest improvements, explore strong beams, identify arch and beam bridges, understand 'compression' and 'tension', understand truss and suspension bridge

Textiles: Stuffed Toys
Design stuffed toy – main component shapes, create template, consider proportions, create 3D from 2D design, measure, mark, cut fabric, create strong secure blanket stitches when joining fabric, use applique to decorate fabric, test/evaluate giving further improvement suggestions, learn to sew blanket stitch to join fabric, thread needles independently

Year 6

Cooking & Nutrition: Come Dine with me – Desing & Make a Meal
Write recipe, explain key steps, method & ingredients, use facts/drawings from research, use correct quantities, adapt based on research, work to given timescale, work safely/hygienically with independence, evaluate recipe, taste test and score, evaluate health and safety to reduce cross contamination, record ingredients and equipment needed, understand food combinations

Mechanisms: Automata Toys
experiment with range of cams, creating design for automata toy based on choice of cam to create a desired movement, Understand how linkages
Change direction of a force, Making things move at the same time, measure, mark, check accuracy, cut and assemble components, select appropriate materials, think about glue drying speed, evaluate work, apply improvement points, use bench hook to saw safely, explore types and directions of motions

Electrical Systems: Steady Hand Games
Design, create stead hand game, name components required, draw design from 3x different perspectives, model ideas through sketch then prototypes, electromagnetic motors and tweaking the motor to improve its function, Constructing a stable base for an electromagnetic game, cut fold assemble a net, make and test a circuit, test and evaluate own and others work, know batteries contain acid – danger

Ready for Key Stage 3