Design & Technology Curriculum

Our Design and Technology Curriculum includes broad concepts that are embedded throughout the curriculum so that each one can be encountered multiple times. It also has a clear focus on disciplinary concepts so that pupils learn how to design, create and evaluate. These components enable pupils to develop and communicate their personal ideas, observations and creations.

KEY SUBSTANTIVE CONCEPTS - GENERATIVE KNOWLEDGE			
COOKING AND NUTRITION	**TEXTILES**	**MECHANISMS**	**STRUCTURES**
Knowledge of food, how to prepare it and the principles of a healthy diet.	Knowledge of a range of fabrics and sewing techniques, in order to make informed choices linked to suitability for product.	Knowledge of varying design and technology mechanisms, including how they built a model or structure with the mechanism, and which tools and products they used to do it.	Knowledge of different structures and how they can be stabilised and strengthened. Know a range of finishing techniques that can be used to improve physical appearance.

DISCIPLINARY KNOWLEDGE AND SKILLS: How we 'work' and 'think' like an expert in DT.				
DESIGNING	**MAKING**	**TECHNICAL KNOWLEDGE**	**EVALUATING AND ANALYSING**	**FOOD AND NUTRITION**
Understanding Contexts, Users and Purposes. Generating, developing, modelling and communicating ideas	Planning, Practical Skills and Techniques.	Applying their knowledge of specific materials to meet the criteria listed in the design, make and evaluation stages.	Evaluate and analyse a range of existing products and their own designs based on a specific design criteria. Know how key individuals have helped to shape the world in which we live in.	Understand and apply the principles of nutrition and learn how to cook.

Design & Technology Curriculum Topics of Study and Substantive Concepts

	SUBSTANTIVE CONCEPTS			
	COOKING AND NUTRITION	TEXTILES	MECHANISMS/ ELECTRONICS	STRUCTURES
YEAR 1 - Fruit Kebab	✓			
YEAR 1 - Felt puppet		✓		
YEAR 1 - Recyclable Castle			✓	✓
YEAR 2 - Healthy Wrap	✓			
YEAR 2 - Moving Vehicle			✓	
YEAR 2 - Treasure Pouch		✓		
YEAR 3 - Seasonal Tart (Greek)	✓			
YEAR 3 - Egyptian House				✓
YEAR 3 - Greek Togas		✓		
YEAR 4 - Occasion Card			✓	
YEAR 4 - Alternative Biscuits (Biscuit bake-off)	✓			
YEAR 4 - Electronic Lamp			✓	
YEAR 5 - Create Healthier Bolognese	✓			
YEAR 5 - Mayan House				✓
YEAR 5 - Technology Sleeve		✓		
YEAR 6 - Electronic Lighthouse			✓	
YEAR 6 - Come Dine with Me	✓			
YEAR 6 - CAM Toy			✓	

Curriculum Overview: Design & Technology

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception (Foundations for DT)	**Food Technology**– Apple Crumble **Construction/Structures**– 3D Angel model		**Construction/Structures**—Junk modelling and 3D penguin model		**Textiles**– Superhero capes	
Year 1				**Food Technology** Fruit Kebab *PSHE Link—Healthy me*	**Structures** Recyclable Castles *English link—Traditional tales*	**Textiles** Felt Puppet
Year 2		**Food Technology** Healthy Wrap *PSHE Link—Healthy me*		**Textiles** Pirate Pouch *English Link*	**Structures/Mechanics** Moving Vehicles Inspirational Inventor—Carl Benz	
Year 3		**Structures** Egyptian Houses			**Textiles** Greek Togas History Link—Ancient Greece	**Food Technology** Seasonal Tart (Greek)
Year 4		**Food Technology** Biscuit Bake-off	**Mechanics** Occasion Card		**Electronics** Lamp	
Year 5	**Food Technology** Healthy bolognaise			**Textiles** Technology Sleeve	**Structures** Mayan houses *History Link— The Mayans*	
Year 6	**Electronics** Lighthouse with motor				**Mechanics** Cam Toy	**Food Technology** Come dine with me

SUBSTANTIVE KNOWLEDGE OVERVIEW

	COOKING AND NUTRITION	TEXTILES	MECHANISMS	STRUCTURES
EYFS-FFDT	• Know the importance of healthy eating. • Know that fruit and vegetables are part of a healthy diet. • Know that some food is grown and some is reared. • Know that fruit and vegetables can be used in other products. • Know that a recipe can be followed to make products with different ingredients.	• Know how to thread beads onto string • Know that fabric can be added for decorative purposes. • Know that textiles can look and feel differently.	• Know some objects that can be pushed or pulled to enable them to move. • Know that wheels are circular and need to be able to rotate to move.	• Know that card can be folded to make structures different. • Know that solid objects can be joined together to make different 3D structures
Year 1	• Know that food comes from plants and animals. • Know that fruit and vegetables come from all different plants and that we grow them. • Know a range of fruit and vegetables and their characteristics. • Know that 5 portions of fruit or vegetables per day are part of a healthy diet. • Know about the features of hygienic food preparation.	• Know that fabric is a material. Know some of its basic properties and uses. • Know that textiles are materials used to make things like clothes and toys. • Know that fabric can be soft, smooth, or rough, and used in different ways. • Know that fabric pieces can be joined by sewing or gluing, with simple stitches like the running stitch used to join fabric. • It's important to be careful with scissors and needles.	• Know that a lever is a stiff bar that moves around a fixed point called a pivot. • Know that levers help parts of a picture or card move. • Know that a pivot is where the lever turns. • Know that pushing or pulling a lever makes it move.	• Know the correct tools to cut, shape and join paper and card. • Know that paper can be folded to make a hinge. • Know how to use scissors correctly and safely. • Know how to join two pieces of paper with glue or tape. • Know that paper can be rolled loosely to make a spiral or tightly to be a strong tube shape. • Know that a 2D net can be used to make a 3D structure.
Year 2	• Know that food can be divided into five groups and how much of each food group is recommended per day. • Know that wraps can form part of a healthy diet if they have the right combination of fillings. • Know how to design and plan a sandwich for a particular purpose. • Know how to prepare food hygienically and safely.	• Know that textiles are flexible materials which are woven from fibres. Know some uses for textiles. • Know how to join fabrics together and how to attach different materials and/or decorations. • Know that some joining techniques such as pining or stapling are quick but not as secure as sewing or gluing. • Know how to use a 2D template to create a 3D fabric treasure pouch. • Know how to sew textiles together using a simple stitching technique.	• Know that different mechanisms produce various types of movement: straight, back-and-forth, circular, or curved. • Know that simple mechanisms include wheels that move using an axle. • Know that a mechanism is a system of parts working together to create movement or steps in a product. • Know that a wheel mechanism consists of a wheel, axle, axle holder, and frame/base. • Know that a wheel rotates on an axle, which is a rod that allows the wheel to rotate freely or turn with it.	• Know how to create joints and structures from paper/card and tape. • Know how to use tabs and joins as techniques for making a structure more stable.

SUBSTANTIVE KNOWLEDGE OVERVIEW

	COOKING AND NUTRITION	TEXTILES	MECHANISMS	STRUCTURES
Year 3	• Know that seasonality of food refers to the time of year when a given type of food is at its peak, either in terms of harvest or its flavour. • Know that different parts of the world have different seasonal food. • Know the benefits and problems with seasonal food being available in shops all year round. • Know how to follow a recipe using seasonal ingredients. • Know how to use a range of cooking utensils and equipment safely.	• Know that different fabrics have different properties which makes them good for different purposes. • Know that there are a variety of different stitches that can be used to join fabrics together. Some are easier and quicker e.g. running stitch; some are more secure e.g. backstitch and others are more aesthetically pleasing e.g. blanket stitch. • Know that aesthetics is highly important in textiles.		• Know that the shape of a structure affects its strength. • Know that the shape of materials can be changed to improve their strength and stiffness. • Know how to turn 2D nets into 3D structures. • Know how to create a frame structure for support. • Know that some frame structures are used to protect or hold things. • Know that other materials can be added to them to help reinforce them.
		ELECTRICAL SYSTEMS		
Year 4	• Know why each of the food groups is important for a balanced diet. • Know the importance of clearly stating ingredients on packaging for nutrition and allergy safety. • Know how to identify which food group a variety of alternative biscuit ingredients belong to. • Know about the different sensory characteristics of these alternative ingredients.	• Know the different components within an electrical circuit in a torch and what their function is. • Know how to create a labelled diagram of the inside and outside of a torch to show the pathway of the electricity. • Know about the different types of switches used within torches and how they work. • Know how to create their own electrical circuit and how to incorporate it into a functional product e.g. a torch. • Know how to work safely with electrical components.	• Know that mechanisms use an input, process, and output to create movement. • Know that sliders, levers, and linkages can be used to make parts of a card move. • Know that a slider is a mechanism that moves back and forth in a straight line. • Know that a lever is a rigid bar that moves around a fixed pivot to create movement. • Know that linkages connect levers and pivots to change the direction or type of movement. • Identify different types of mechanisms in moving cards, such as sliders, levers, and linkages. • Know how to assemble a simple moving mechanism in a card by cutting, folding, and attaching components accurately.	

SUBSTANTIVE KNOWLEDGE OVERVIEW

	COOKING AND NUTRITION	TEXTILES	MECHANISMS	STRUCTURES
Year 5	• Know that calories come from fats, proteins and carbohydrates. • Know how to interpret a nutritional label to evaluate how healthy a Bolognese is. • Know what cross-contamination means and how to avoid it. • Know that beef comes from cattle and how it is reared and processed. • Know that there are different cooking processes and that Bolognese can be cooked using baking, grilling or frying.	• Know how to use computer-aided design (CAD) software to plan and create digital designs. • Know that fastenings such as zips, Velcro, buttons, and poppers can be used to secure designs. • Know how to choose the most suitable fastening based on the materials and function of the design. • Know that different materials have different properties and affect the choice of fastening. • Know how to measure, cut, and sew fabric accurately. • Know how to use a variety of stitching techniques such as running stitch, backstitch, and overcasting to join fabric pieces. • Know that testing the finished sleeve for durability and functionality (such as the fitting of the device, fastening, and comfort) is important for evaluating the design.		• Know that frame structures are rigid support structures that use beams, columns and slabs to hold large forces of gravity and weight. • Know different ways to reinforce structures including, factors that can be changed to increase strength, stability and stiffness of a bridge. • Understand how triangles and arches can be used to reinforce structures.
		ELECTRICAL SYSTEMS		
Year 6	• Know that a planned meal should include food from different groups in order for it to healthy. • Know the different ways to prepare food and select the appropriate techniques for each partof the planned meal. • Know the different ways to cook food and select the most appropriate process for each course of the planned meal. • Know the importance of using seasonal foods for eating sustainably and the environment.	• Know that mechanical and electrical systems have an input, process and output. • Know how more complex electrical circuits and components can be used to create functional products • Know the different components needed for an electrical circuit and how to connect up the circuit using the components.	• Know that mechanisms, including levers, pulleys and gears, allow us to use a smaller force to have a greater effect and change motion. • Know that a pulley is a wheel on a fixed axle with a groove in it to guide a rope or cable. • Know that a motor can be used to drive a pulley. • Know that smaller pulleys go faster on flat surfaces and that larger pulleys usually go better up hill. • Know how a cams mechanism creates movement. • Know the different components within a cams mechanism and how they function. • Understand how cams can be used to make a model move. • Know that a cams profile causes a follower to rise, fall or remain static at different points depending on its shape.	

Captain Cook Primary School

EYFS

Foundations For Design & Technology

EYFS Foundations for Design & Technology

Area of Learning

Physical Development and Expressive Arts

Gross and fine motor experiences develop incrementally throughout early childhood, starting with sensory explorations and the development of a child's strength, co-ordination and positional awareness through tummy time, crawling and play movement with both objects and adults. Fine motor control and precision helps with hand-eye co-ordination, which is later linked to early literacy. Repeated and varied opportunities to explore and play with small world activities, puzzles, arts and crafts and the practice of using small tools, with feedback and support from adults, allow children to develop proficiency, control and confidence. The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe.

Key Learning Themes

Nursery		Reception	
Autumn	Me and My Family Colourful Autumn Materials	**Autumn**	All Change! Digging up Dinosaurs.
Spring	Around the World-Cold places On the Farm!	**Spring**	Adventurers and Explorers. Space.
Summer	In the Garden-Minibeasts Let's Get Physical Dinosaurs	**Summer**	Captain Cook's Favourite Books That's Super!

Early Learning Goal for Physical Development & Expressive Art and Design

- Use a range of small tools including, scissors, paint brushes and cutlery.
- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
- Share their creations, explaining the process they have used.

Key Vocabulary

Design: draw, ideas. **Make**: build, make. **Evaluate**: like, don't like, better, worse. Textiles: bead, button, fabric, felt, scissors, sew. Materials: cellotape, glue stick, masking tape, paperclip, plasticine, ruler, straw. Cooking: Apron, chop, cut, equipment, fork, knife, spoon, mix

Conceptual Knowledge and Understanding

Nursery

- Explore systems in toys e.g. pop-up books. understand how to manipulate items - pushing toys forwards and backwards. use one-handed tools and equipment.
- Use scissors to snip paper.
- Explore a range of materials and begin to experiment with them to create forms and structures.
- Explore some simple joining techniques (glue, tape).
- Begin to select tools independently for a given purpose.
- Say what they have made and how they have made it.

Reception

- Use one-handed tools and equipment with increasing control and accuracy.
- Use scissors to cut out more complex shapes and cut outs.
- Look at pictures to help decide what to make.
- Begin to make decisions about what to create.
- Look at pictures of real structures/buildings/vehicles etc. and talk about their features with others to help develop ideas.
- Refine ability to create forms and structures using a range of materials and textures.
- Explore a variety of effects to express my ideas when using materials for decorative purposes.
- Select an appropriate tool for a given purpose.
- Safely use and explore tools to achieve a texture, form or function e.g. cutting, stirring, printing.
- Work with peers to create a shared project.
- Say what they like about a model or structure they have made and describe it's features.
- Reflect and make choices about how to improve their model as they work on it.
- Listen to feedback from others to improve a creation.
- Transfer skills and techniques from previous learning into new projects.

Captain Cook Primary School

Year 1
Design & Technology
Curriculum

Year 1 D&T - Broader Curriculum Aims and Objectives

Key Themes

- Food Technology
- Textiles
- Structures/ Mechanisms

Topics of Study

- Fruit kebabs
- Joining - Felt puppet
- Sliders - Recyclable castle

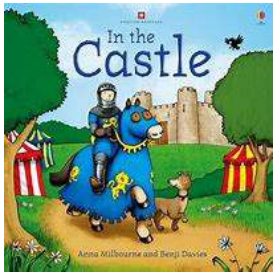
Key D&T Knowledge and Understanding

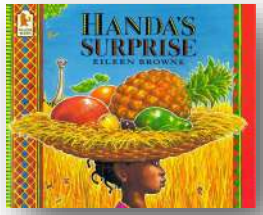
- Know that food comes from plants and animals.
- Know that fruit and vegetables come from all different plants and that we grow them.
- Know a range of fruit and vegetables and their characteristics.
- Know that 5 portions of fruit or vegetables per day are part of a healthy diet.
- Know about the features of hygienic food preparation.
- Know that fabric is a material. Know some of its basic properties and uses.
- Know that fabric is a material that can be cut, shaped, and joined using glue or simple stitches.
- Know that a running stitch is a basic way to join two pieces of fabric together.
- Know that different fabrics feel and look different, and some are stronger or softer than others.
- Know that templates help cut fabric into the right shapes for making simple textile products.
- Know the correct tools to cut, shape and join paper and card.
- Know that paper can be folded to make a hinge.
- Know that a slider is a rigid bar which can be moved backwards and forwards along a straight line.
- Know that a guide or a bridge is used to keep sliders in place and control movement.
- Know how to use scissors correctly and safely.
- Know how to join two pieces of paper with glue or tape.
- Know that paper can be rolled loosely to make a spiral or tightly to be a strong tube shape.
- Know that a 2D net can be used to make a 3D structure.

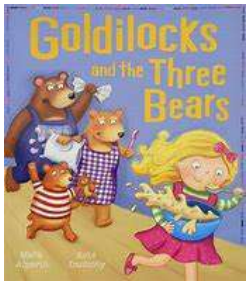
Vocabulary

Skewer, ingredients, carton, peel, peeler, recipe, slice, stencil, template. Fabric, cut, stitch, running stitch. Accurate, design, fix, model, test. Assemble, design criteria, evaluation, user, purpose, function. Net, stable, strong, weak, structure, castle, flag, recyclable, cardboard, plastic.

Quality Literature Links







Year 1 D&T - Broader Curriculum Aims and Objectives

Progression of Skills / Disciplinary Knowledge

Designing	Making	Technical Knowledge	Evaluating and Analysing	Cooking and Nutrition
Understanding Contexts, Users and Purposes. Generating, developing, modelling and communicating ideas	**Planning, Practical Skills and Techniques**	**Construction and Textiles**	**Own Ideas and Products Existing Products**	**Understand and apply the principles of nutrition and learn how to cook.**
• Have own ideas and explain them. • Explain what a product is for and how it will work. • Use pictures and words to plan. • Begin to use models to plan. • Design a product using simple design criteria- provided.	• Explain what is being made and why. • Consider and plan what to do next. • Select tools/equipment to cut, shape, join, finish and explain choices. • Measure, mark out, cut and shape with support. • Choose suitable materials and explain choices. • Use finishing techniques to make a product look good. • Work in a safe manner.	• Measure and join material with support. • Describe some different characteristics of materials. • Suggest ways to make material/product stronger. • Use joining, rolling or folding to make things stronger. • Use own ideas to strengthen a product.	• Discuss work making links to the planned product. • Talk about existing products considering: use, materials, how they work, audience and where they might be used. • Talk about existing products and express negatives and positives. • Discuss products made by others.	• Describe textures. • Work in a hygienic and safe manner. • Identify where some foods come from e.g. plant/animal. • Describe differences between some food groups. • Discuss how fruit and vegetables are healthy. • Cut, peel and grate safely, with support.

Year 2
Design & Technology
Curriculum

Year 2 D&T - Broader Curriculum Aims and Objectives

Key Themes

- Food Technology
- Mechanisms
- Textiles

Topics of Study

- Taste Combinations - Healthy wrap
- Wheels and Axles - Moving vehicle
- Stitching Textiles - Pirate pouch

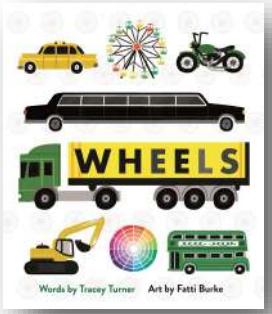
Key D&T Knowledge and Understanding

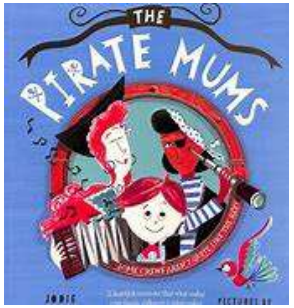
- Know that food comes from plants and animals.
- Know that fruit and vegetables come from all different plants and that we grow them.
- Know a range of fruit and vegetables and their characteristics.
- Know that 5 portions of fruit or vegetables per day are part of a healthy diet.
- Know about the features of hygienic food preparation. Know that fabric is a material. Know some of its basic properties and uses.
- Know that different mechanisms produce different types of movement. Know that simple mechanisms move in a straight line, backwards and forwards, round and round or in a curve.
- Know how to create wheels that move using an axle.
- Know the correct tools to cut, shape and join paper and card.
- Know that paper can be folded to make a hinge.
- Know how to use scissors correctly and safely.
- Know how to join two pieces of paper with glue or tape.
- Know that paper can be rolled loosely to make a spiral or tightly to be a strong tube shape.
- Know that a 2D net can be used to make a 3D structure.

Vocabulary

Alternative, diet, balanced diet, evaluate, ingredients, expense, nutrients, packaging, refrigerator. Axle, decorate, vehicle, mechanism, stable, strong, weak, waterproof, test. Design criteria, input, linkage, mechanical, mechanism, output, pivot. Function, man-made, mould, natural, stiff, structure. Accurate, fabric, knot, pouch, running-stitch, sew, shape, stencil, template.

Quality Literature Links





Year 2 D&T - Broader Curriculum Aims and Objectives

Progression of Skills / Disciplinary Knowledge

Designing	Making	Technical Knowledge	Evaluating and Analysing	Cooking and Nutrition
Understanding Contexts, Users and Purposes. Generating, developing, modelling and communicating ideas	**Planning, Practical Skills and Techniques**	**Mechanisms and Textiles**	**Own Ideas and Products Existing Products**	**Understand and apply the principles of nutrition and learn how to cook.**
• Have own ideas and plan what to do next. • Explain ideas and describe how they might be achieved. • Explain the purpose of a product, how it will work and how it will be suitable for a user. • Describe and design using pictures, words, models, diagrams and begin to use IT. • Design products for self and others following design criteria. • Choose the best tools and materials and explain choices. • Use knowledge of existing products to generate ideas.	• Explain what is going to be made and how it fits the purpose. • Make suggestions about what to do next. • Join materials/ components together in different ways. • Measure, mark out, cut and shape materials and components with support. • Describe the tools being used and why. • Choose suitable materials and explain choices linked to characteristics. • Use finishing techniques to make products look good. • Work in a safe manner.	• Measure and cut materials • Describe some different characteristics of materials. • Join materials (inc textiles) in different ways and explain the process. • Use joining, rolling or folding to make things stronger. • Use own ideas to strengthen a product. • Explain choice of textiles. • Understand that a 3D textile structure can be made from two identical fabric shapes. • Begin to understand how to use wheels and axles. • Understand wheels must be round to rotate on an axle.	• Describe what went well thinking about design criteria. • Talk about existing products considering: use, materials, how they work, audience, where they might be used, express personal opinion. • Evaluate how good existing products are. • Talk about what could make a product better and what could have been done differently.	• Explain basic hygiene. • Describe the importance of a balanced diet. • Show understanding of where food comes from- animal/underground etc. • Explain there are different groups of food. • Describe what is meant by “five a day”. • Cut, peel and grate with increasing confidence.

Year 3
Design & Technology
Curriculum

Year 3 D&T - Broader Curriculum Aims and Objectives

Key Themes

- Food Technology
- Structures
- Textiles

Topics of Study

- Eating seasonally - Making Seasonal Greek tarts.
- Stable structures - Egyptian Houses
- Altering - Greek Togas

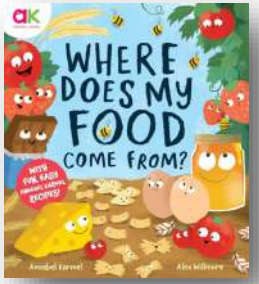
Key D&T Knowledge and Understanding

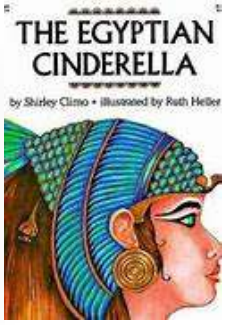
- Know that seasonality of food refers to the time of year when a given type of food is at its peak, either in terms of harvest or its flavour.
- Know that different parts of the world have different seasonal food.
- Know the benefits and problems with seasonal food being available in shops all year round.
- Know how to follow a recipe using seasonal ingredients.
- Know how to use a range of cooking utensils and equipment safely.
- Know that the shape of a structure affects its strength.
- Know that the shape of materials can be changed to improve their strength and stiffness.
- Know how to turn 2D nets into 3D structures.
- Know how to create a frame structure for support.
- Know that some frame structures are used to protect or hold things.
- Know that other materials can be added to them to help reinforce them.
- Know that fabric can be cut, shaped, and joined to create a product.
- Know that sewing is a method of joining fabric and can be done using different stitches.
- Know how to thread a needle and sew using a simple running stitch.
- Know that different fabrics have different properties (e.g., strong, flexible, soft).
- Know that a template can be used to help cut fabric accurately.
- Know how to evaluate a textile product based on its design and functionality.

Vocabulary

Climate: Polar, Mediterranean, Temperate and Tropical, exported, imported, nutrients, recipe, seasonal food, function, system, thumbnail sketch. 2D/3D shapes, design criteria, evaluation, façade, feature, net, recyclable, scoring, stable, strong, weak, structure, tab. Accurate, applique, cross-stitch, decorate, detail, fabric, patch, running stitch, seam, stencil, target audience.

Quality Literature Links





Careers Link

Tonia Buxton

Year 3 D&T - Broader Curriculum Aims and Objectives

Progression of Skills / Disciplinary Knowledge

Designing	Making	Technical Knowledge	Evaluating and Analysing	Cooking and Nutrition
Understanding Contexts, Users and Purposes. Generating, developing, modelling and communicating ideas	**Planning, Practical Skills and Techniques**	**Construction and Textiles**	**Own Ideas and Products** **Existing Products**	**Understand and apply the principles of nutrition and learn how to cook.**
• Show how a design meets a range of requirements. • Begin to research others' needs • Describe the purpose of a product. • Follow a given design criteria. • Have a least one idea about how to create a product. • Create plans which show order, equipment and tools. • Make design decisions. • Explain how a product will work. • Begin to use computers to show design.	• Select suitable tools/ equipment; explain choices; begin to use them accurately. • Select appropriate materials that are fit for purpose. • Work through a plan in order. • Consider how good a product will be. • Begin to measure, mark out, cut and shape materials/components with some accuracy. • Begin to assemble, join and combine materials and components with some accuracy. • Apply a range of finishing techniques with some accuracy.	• Use appropriate materials . • Work accurately to make cuts and holes. • Join materials. • Begin to make strong structures. • Select appropriate tools/ techniques. • Alter a product after checking, to make it better. • Begin to try new/different ideas. • Think about the user when choosing textiles. • Begin to devise a template. • Explain how to join things in different ways. • Understand that a simple fabric shape can be used to make a 3D textiles project. • Measure carefully to avoid	• Consider design criteria while designing and making. • Use design criteria to evaluate a finished product. • Suggest what could be changed to improve a product. • Evaluate existing products considering: how well they have been made, materials, whether they work, how they have been made, if they are fit for purpose. • Learn about some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products.	• Carefully select ingredients. • Use equipment safely. • Make a product look aesthetically pleasing. • Begin to understand that food comes for the UK and the wider world. • Describe a varied diet in terms of healthy balance of food and drinks. • Explain how food and drink are needed for active, healthy diets.

Year 4
Design & Technology
Curriculum

Year 4 D&T - Broader Curriculum Aims and Objectives

Key Themes

- Food Technology
- Mechanisms
- Electrical Systems

Topics of Study

- Adapting a recipe - Alternative Biscuits (biscuit bake-off)
- Levers, Sliders, Linkages - Occasion Card
- Electrical systems - Torches

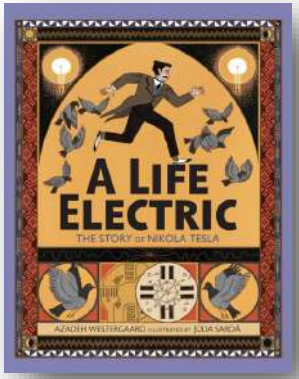
Key D&T Knowledge and Understanding

- Know why each of the food groups is important for a balanced diet.
- Know the importance of clearly stating ingredients on packaging for nutrition and allergy safety.
- Know how to identify which food group a variety of alternative biscuit ingredients belong to.
- Know about the different sensory characteristics of these alternative ingredients.
- Know the different components within an electrical circuit in a torch and what their function is.
- Know how to create a labelled diagram of the inside and outside of a torch to show the pathway of the electricity.
- Know about the different types of switches used within torches and how they work.
- Know how to create their own electrical circuit and how to incorporate it into a functional product e.g. a torch.
- Know how to work safely with electrical components.
- Know that there is always an input and an output in a mechanism.
- Know how simple linkages change the direction of motion.
- Identify the parts in different linkage mechanisms.
- Know that a lever is something that turns on a pivot, which enables things to move on a curve.
- Know that a linkage is a system of levers that are connected by pivots.

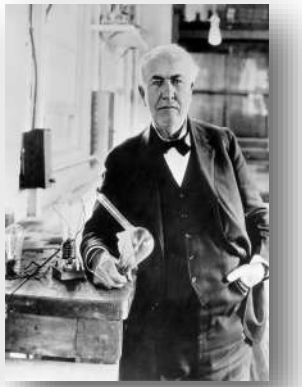
Vocabulary

Adapt, equipment, evaluation, flavour, ingredients, method, net, packaging, prototype, quantity, recipe, target audience, unit of measurement. Aesthetic, design, design criteria, function, graphics, input, output, linkage, kinetic energy, mechanism, net, structure. Cladding, frame structure, inspiration, reinforce, stable, texture, theme. Battery, bulb, buzzer, cell, conductor, copper, electrical item, insulator, series circuits, switch, test, wire.

Quality Literature Links



Ground Breaking Products



Thomas Edison

Year 4 D&T - Broader Curriculum Aims and Objectives

Progression of Skills / Disciplinary Knowledge

Designing	Making	Technical Knowledge	Evaluating and Analysing	Cooking and Nutrition
Understanding Contexts, Users and Purposes. Generating, developing, modelling and communicating ideas	**Planning, Practical Skills and Techniques**	**Construction, Electrical systems and Mechanisms.**	**Own Ideas and Products** **Existing Products**	**Understand and apply the principles of nutrition and learn how to cook.**
• Use research for design ideas. • Show how a design meets a range of requirements and is fit for purpose. • Begin to create own design criteria. • Have at least one idea about how to create a product and suggest improvements to design. • Produce a plan and explain it to others. • Discuss how realistic a plan is. • Include an annotated sketch. • Make and explain design decisions considering the availability of resources. • Explain how a product will work. • Make a prototype.	• Select suitable tools and equipment; explain choices in relation to required techniques and use accurately. • Select appropriate materials which are fit for purpose and explain choices. • Work through a plan in order. • Realise if a product is going to be good quality. • Measure, mark out, cut and shape materials/ components with some accuracy. • Assemble, join and combine materials and components with some accuracy.	• Attempt to make a product strong. • Continue to work on a product even if the original did not work. • Select the most appropriate tools/techniques. • Use a number of components in a circuit. • Use simple levers and linkages to create movement. • Understand moving parts must be securely joined for functionality. • Learn how to use a computer program to design and create a product.	• Refer to a design criteria while designing and making. • Use criteria to evaluate a product. • Begin to explain how an original design could be improved. • Evaluate existing products considering: how well they have been made, materials, whether they work, how they have been made, if they are fit for purpose. • Discuss by whom, when and where products were designed. • Research whether products can be recycled or reused. • Learn about some inventors/designers/ engineers/chefs/ manufacturers of ground -breaking products.	• Explain how to be safe and hygienic and apply this when cooking. • Consider how to present products in interesting and attractive ways. • Understand that ingredients can be fresh, pre-cooked or processed. • Begin to understand about food being grown, reared or caught in the UK and wider world. • Describe an eat-well plate and what a healthy diet is made up of. • Use some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading and baking.

Captain Cook Primary School

Year 5 Design & Technology Curriculum

Year 5 D&T - Broader Curriculum Aims and Objectives

Key Themes

- Food
- Structures
- Textiles

Topics of Study

- What could be healthier? - Create healthier Bolognese.
- Structures - Mayan Houses
- Fastenings - Technology Sleeve

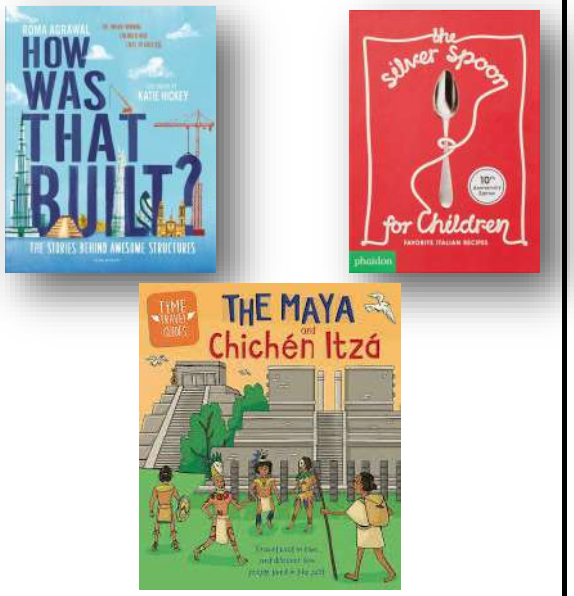
Key D&T Knowledge and Understanding

- Know that calories come from fats, proteins and carbohydrates.
- Know how to interpret a nutritional label to evaluate how healthy a Bolognese is.
- Know what cross-contamination means and how to avoid it.
- Know that beef comes from cattle and how it is reared and processed.
- Know that there are different cooking processes and that Bolognese can be cooked using baking, grilling or frying.
- Know that frame structures are rigid support structures that use beams, columns and slabs to hold large forces of gravity and weight.
- Know different ways to reinforce structures including, factors that can be changed to increase strength, stability and stiffness of a structure.
- Understand how triangles and arches can be used to reinforce structures.
- Know that different fabrics have different properties which makes them good for different purposes.
- Know that there are a variety of different stitches that can be used to join fabrics together. Some are easier and quicker e.g. running stitch; some are more secure e.g. backstitch and others are more aesthetically pleasing e.g. blanket stitch.
- Know that aesthetics is highly important in textiles.

Vocabulary

Design brief, design criteria, designer, client, verbal, visual, , beef, reared, processed, ethical, diet, ingredients, supermarket, farm, balanced, beam strength, technique, corrugation, lamination, stiff, rigid, factors, stiffness, stability, visual appeal, aesthetics, joint, mark out, hardwood, softwood, wood file/rasp, sand/glass paper, bench hook/vice, tenon/coping saw, assemble, reinforce, quality, accuracy, fastening, applique, seam, zip, button, press stud.

Quality Literature Links



Ground Breaking Products

Plant-based products: Quorn

Year 5 D&T - Broader Curriculum Aims and Objectives

Progression of Skills / Disciplinary Knowledge

Designing	Making	Technical Knowledge	Evaluating and Analysing	Cooking and Nutrition
Understanding Contexts, Users and Purposes. Generating, developing, modelling and communicating ideas	**Planning, Practical Skills and Techniques**	**Construction and Textiles**	**Own Ideas and Products Existing Products**	**Understand and apply the principles of nutrition and learn how to cook.**
• Used the internet and questionnaires for research and design ideas. • Take a user's view into account when designing. • Consider needs/wants of individuals/groups when designing and ensure product is fit for purpose. • Create own design criteria. • Produce logical, realistic plans and explain them to others. • Use cross-sectional planning and annotated sketches. • Make design decisions considering time and resources. • Explain how parts of a product will work. • Model and refine design ideas by making prototypes and using pattern pieces.	• Use selected tools/ equipment with a good level of precision. • Produce suitable lists of tools, equipment/materials needed. • Select appropriate materials fit for purpose; explain choices, considering functionality. • Create and follow detailed step-by-step plans. • Explain how a product will appeal to an audience. • Mostly measure, mark out, cut and shape materials/ components accurately. • Mostly assemble, join and combine materials/ components accurately. • Mostly apply a range of finishing techniques accurately. • Use techniques that involve a small number of steps.	• Select materials carefully, considering intended use of product and appearance. • Explain how a product meets the design criteria. • Measure accurately enough to ensure precision. • Ensure a product is strong and fit for purpose. Begin to reinforce and strengthen a 3D structure. • Refine a product after testing. • Try new and different ideas. • Learn how to use a computer program to design and create a product.	• Evaluate the quality of a design while designing and making. • Evaluate ideas finished product against specification, considering purpose and appearance. • Test and evaluate final product. • Evaluate and discuss existing products considering: how well they've been made, materials, whether they work, how they have been made and if they are fit for purpose. • Evaluate how much products cost to make and how innovative they are. • Research how sustainable materials are. • Talk about some inventors/ designers/engineers/chefs/ manufacturers of ground-breaking products.	• Analyse the taste, texture, smell and appearance of a range of foods. • Follow instructions. • Make healthy eating choices from an understanding of a balanced diet. • Know that a variety of different foods are used all over the world. • Join and combine a range of ingredients and comment on their success. • Measure and weigh ingredients appropriately. • Consider and explain how a the finished product could be improved. • Discuss how well the finished product meets the design criteria and the needs of the user.

Captain Cook Primary School

Year 6 Design & Technology Curriculum

Year 6 D&T - Broader Curriculum Aims and Objectives

Key Themes

- Food and Nutrition
- Electrical Systems
- Mechanisms

Topics of Study

- Come Dine with Me
- Moving Lighthouse
- CAM Toy

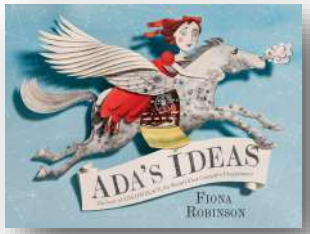
Key D&T Knowledge and Understanding

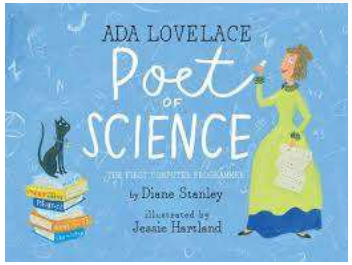
- Know that a planned meal should include food from different groups in order for it to healthy.
- Know the different ways to prepare food and select the appropriate techniques for each course of the planned meal.
- Know the different ways to cook food and select the most appropriate process for each part of the planned meal.
- Know the importance of using seasonal foods for eating sustainably and the environment.
- Know that mechanical and electrical systems have an input, process and output.
- Know how more complex electrical circuits and components can be used to create functional products
- Know the different components needed for an electrical circuit and how to connect up the circuit using the components.
- Know that mechanisms, including levers, pulleys and gears, allow us to use a smaller force to have a greater effect and change motion.
- Know that a pulley is a wheel on a fixed axle with a groove in it to guide a rope or cable.
- Know that a motor can be used to drive a pulley.
- Know that smaller pulleys go faster on flat surfaces and that larger pulleys usually go better up hill.
- Know that a cams profile causes a follower to rise, fall or remain static at different points depending on its shape.
- Understand how cams can be used to make a model move.
- Know how a cams mechanism creates movement.
- Know the different components within a cams mechanism and how they function.
- Know that structures are built to support weight and resist forces.
- Know that frame structures use rigid materials for strength, while shell structures rely on their shape.
- Know that materials are chosen based on strength, flexibility, durability, and weight.

Vocabulary

Automata, cam, follower, follower base, follower topper, inner workings, mechanism, cross sectional diagram, design, template, model, motor, circuit, stable, movement equipment, flavours, ingredients, method, research, recipe, bridge method, cross-contamination, farm to fork, preparation, pulley, drive belt, axle, bearing, series circuit, short circuit.

Quality Literature Links





Ground Breaking Individuals

Year 6 D&T - Broader Curriculum Aims and Objectives

Progression of Skills / Disciplinary Knowledge

Designing	Making	Technical Knowledge	Evaluating and Analysing	Cooking and Nutrition
Understanding Contexts, Users and Purposes. Generating, developing, modelling and communicating ideas	**Planning, Practical Skills and Techniques**	**Construction and Textiles**	**Own Ideas and Products Existing Products**	**Understand and apply the principles of nutrition and learn how to cook.**
• Draw on market research to inform design. • Use research of user's individual needs, wants, requirements for design. • Identify features of design that wil appeal to the intended user. • Create own design criteria and specification. • Generate innovative design ideas, follow and refine a logical plan. • Use annotated sketches. • Make design decisions, considering resources and cost. • Clearly explain how parts of design will work, and how they are fit for purpose. • Independently model and refine design ideas by making prototypes and using pattern pieces. • Use computer-aided designs.	• Use selected tools and equipment precisely. • Produce suitable lists of tools, equipment, materials needed, considering constraints. • Select appropriate materials, fit for purpose, explain choices, considering functionality and aesthetics. • Create, follow and adapt detailed step-by-step plans. • Explain how the product will appeal to the audience and make changes to improve quality. • Accurately measure, mark out, cut and shape materials/ components. • Accurately assemble, join and combine materials/ components. • Accurately apply a range of finishing techniques. • Use techniques that involve a number of steps. • Be resourceful with practical problems.	• Select materials carefully, considering intended use of the product, the aesthetics and functionality. • Explain how a product meets the design criteria. • Reinforce and strengthen a 3D structure or product. • Refine a product after testing, considering aesthetics, functionality and purpose. • Try new/different ideas with confidence. • Use different types of circuit and think of ways in which adding a circuit would improve a product. • Make a product attractive and strong. • Make a prototype. • Use a range of joining techniques.	• Evaluate the quality of design while designing and making, considering if it is fit for purpose. • Evaluate ideas and finished product against specification stating if it's fit for purpose. • Test and evaluate final product: explain what would improve it and the effect different resources may have had. • Conduct thorough evaluations of existing products considering how well they've been made, materials, whether they work, how they've neem made and if they are fit for purpose. • Evaluate how much products cost to make and how innovative they are. • Research and discuss how sustainable materials are. • Consider the impact of products beyond their intended purpose. • Discuss some key inventors/ designers/engineers/chefs/ manufacturers of ground-breaking products.	• Understand how a recipe can be adapted by adding/substituting ingredients. • Explain seasonality of foods. • Present a product to a high standard to make the product interesting and aesthetically attractive. • Learn about food processing methods. • Adapt recipes to change appearance, taste, texture or aroma. • Describe some of the different substances in food and drink and how they can affect health. • Prepare and cook a variety of dishes safely and hygienically. • Use of range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.