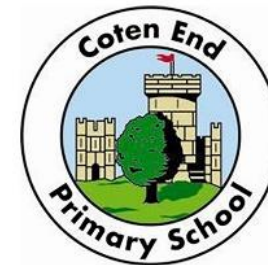


OUR COTEN END DESIGN AND TECHNOLOGY CURRICULUM



INTENT

Design and Technology at Coten End encourages children to use creativity and imagination to design, make and evaluate products in a variety of contexts. Children will have the opportunity to solve problems, drawing on their own or others' experiences in order to consider how to improve existing products. Lessons will be engaging and practical, with the children learning a variety of skills across four different areas: mechanisms, structures, textiles and cookery. These skills are developed and built upon each year. Cookery lessons focus on seasonality and developing an understanding of where food comes from. Each topic follows a set sequence of lessons – explore, design, create, evaluate. Our main aim for the D&T curriculum at Coten End is for children to be resourceful, resilient and innovative, appreciating real and relevant contexts, human creativity and achievement. DT requires children to draw on skills within Mathematics, Art, Science and Computing, creating cross curricular links with these subjects. At Coten End, we want children to be inspired, to become innovators and risk takers. We want Design and Technology to prepare our children, to give them the opportunities, responsibilities, and experiences they need to be successful in later life.

National Curriculum

Key Stage 1

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 [for example, 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 [for example, 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 [for example, levers, sliders, wheels and axles], in their products.

Cooking and nutrition:

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. Pupils should be taught to:

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

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 [for example, 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 [for example, 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 [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- apply their understanding of computing to program, monitor and control their products.

Cooking and nutrition:

- understand and apply the principles of a healthy and varied diet
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

DESIGN AND TECHNOLOGY: OVERVIEW AND END POINTS

Reception Design and Technology Curriculum		
Learning Theme	Space Explorers (Cookery -Chinese New Year)	Dino Detectives
EYFS Curriculum (statutory framework – expressive arts and design)	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.	
Knowledge I know...	I know... - Beginning to plan before they start and can talk about their design. - Designs can be changed or modified - What different tools can be used for - How to evaluate my design - Is developing control over tools - Makes independent choices about the resources they need and can talk about their creations. - Is confident to use different techniques and materials to achieve the desired effect and can talk about what they have done. - Can use a range of one-handed tools and is able to select the tool that is the most appropriate for the job. - Understands when a design needs to be modified and perseveres to solve problems. - Use the basic principles of a healthy and varied diet to prepare dishes. - Understand where food comes from.	I know... - Designs need to be thought about and planned - Designs can be changed or modified - How to evaluate my design - Able to represent their ideas and feelings through a variety of media and materials in both 2D and 3D forms and can plan and then talk through the process. - How to join materials together - How to make a structure strong and stable - How to make a structure balance - What different tools can be used for - Is developing control over tools - Is confident to use different techniques and experiment with a variety of materials - Makes independent choices about the resources they need and can talk about their creations. - Developing more control over tools and can cut along a line with scissors and use a range of moulding tools with malleable materials. - Materials have different textures - Combining materials can create different textures - How to use different materials to express my ideas
Skills I am learning to...	I am learning to... - Manipulate and control tools - Follow instructions - Follow good hygiene and safety practices	I am learning to... - Make decisions and choices - Be creative and innovative - Be resourceful

	• Make decisions and choices • Control and manipulate tools • Observe and ask questions • Explore and investigate • Cut (the bridge technique) • Explain and describe • Review • Take pride in my work	• Assemble and disassemble • Control and manipulate tools • Observe and ask questions • Think critically and solve problems • Connect ideas • Explore and investigate • Mould and sculpt • Draw • Pull • Tear • Fold • Cut • Join • Stick • Roll • Talk about your design • Plan and organise • Review • Take pride in my work
Vocabulary	healthy diet, bridge method, taste recipe, evaluate	design, make, evaluate, join, structure, materials, measure, slot, flange, evaluate
At the end of Reception, a great design technologist can: ✓ join using different techniques including slots and flanges. ✓ cut safely using the bridge method ✓ design a strong and stable structure using a range of joining techniques		

Year 1 Design and Technology Curriculum

Outcome	Mechanisms - Sliders/Levers: Moving Picture	Structure: Boat	Cookery: Fruit Crumble
Explore	- To describe similarities and differences between products (a range of sliding books/birthday cards) - To identify how the different mechanisms work - To identify sliders and levers and explain how they work.	- To understand that there are different boats for different purposes - To understand that boats have changed over time - To explore which materials float and which sink	- To identify the source of common foods - To identify the main food groups - To understand that eating healthy is important.
Design	- To draw simple diagrams with basic labelling - To design a moving picture (sliding or pivoting). - To select which mechanism would be best for my design. - To suggest appropriate materials and tools to use	- To draw simple diagrams with basic labelling - To suggest appropriate materials and tools to use - To generate simple design criteria - To apply my knowledge of which materials float and sink	- To select appropriate equipment and ingredients. - To create a simple recipe
Make	- To create simple sliders and levers using card and split-pins - To use glue and tape to accurately join - To choose appropriate materials and tools to use to fit purpose - To cut card safely and accurately using scissors	- To select and use a range of different joining techniques (taping, stapling, or gluing) - To build a secure structure which stands up independently	- To understand why I need to wash my hands before I start using ingredients - To follow a simple recipe - To use the bridge knife technique to safely cut fruit - To observe how ingredients change when combined
Evaluate	- To talk about their own work and others' work, identifying strengths and weaknesses. - To explain how they might fix a product. - To explain how they could improve their product.	- To talk about their own work and others' work, identifying strengths and weaknesses. - To explain how they might fix a product. - To explain how they could improve their product.	- To talk about their own work and others' work, identifying strengths and weaknesses. - To evaluate the appearance and taste of my finished product. - To know how I could improve my design.
Vocabulary	mechanism, lever, slider, pivot, slot, guide or bridge, design criteria, evaluate	design, make, evaluate, join, structure, materials, measure, float, sink, waterproof	food groups, diet, nutrients, balanced diet, bridge method, taste, healthy

At the end of Year 1, a great design technologist can:

- ✓ identify and make a slider mechanism
- ✓ identify the source of common foods and identify the main food groups
- ✓ cut safely using the bridge method
- ✓ design a strong and stable structure using a range of joining techniques and considering suitability of different materials for a purpose

Year 2 Design and Technology Curriculum

Learning Theme	Flames and Fireworks	Fantastic Mr Fox	Castle Quest
Outcome	Structures: Paper Houses	Mechanisms: Egg Carrier Vehicles	Cookery: Tacos
Explore	- To explore how to use paper in a variety of ways. - To join using a variety of techniques – flange, slot and tabs.	- To identify the main parts of a car (chassis, axle, body, etc) - To look at different vehicle mechanisms and identify how the axle is able to rotate - To identify how wheels and axles are used in everyday life. - To know the history of how the wheel and axle was discovered. To know that Karl Benz built the world's first petrol-powered car.	- To explain where the food they eat comes from (animals/plants/ countries) - To know the importance of eating a healthy and varied diet. - To understand that different foods are popular in different countries and link this to the crops grown there.
Design		- To identify design criteria. - To create a labelled diagram, based on design criteria. - To label all materials used. - To explain how the axle will be able to turn.	- To choose from a variety of meat and vegetables to combine flavours - To select appropriate equipment and ingredients.
Make		- To attach the axle in a way that still enables it to rotate - To attach the mechanism securely to the body (wheels) - To build a stable compartment to ensure the egg is secure - To use safe cutting and joining techniques	- To understand why I need to wash my hands before I start using ingredients - To use the claw and bridge knife technique to chop hard foods - To observe changes during the cooking process - To select appropriate equipment for cooking - To use a grater safely - To follow a recipe to create a product - To measure the ingredients I need - To use a hob safely to fry my ingredients
Evaluate	To evaluate and improve my structure (paper house) using a variety of techniques.	To explain how the finished product meets their design criteria.	To evaluate the appearance, taste and texture of my finished product.

		- To suggest improvements to their product. - To identify features that worked well.	To identify how I could improve my design.
Vocabulary		mechanism, body, chassis, wheel, axle, dowel, design criteria, rotate	recipe, claw and bridge technique
At the end of Year 2, a great design technologist can: ✓ join using different techniques including slots and flanges. ✓ identify the parts required to make a moving vehicle. ✓ follow their design carefully, making improvements if required. ✓ explain the importance of eating a healthy and varied diet. ✓ cut safely using the claw method			

Year 3 Design and Technology Curriculum

Learning Theme	Fossil Hunters	The Firework Maker's Daughter	Tomb Raiders
Outcome	Textiles: Felt Leaves	Mechanism: Pop-up books (levers and linkages)	Cookery: Bread
Explore	- To identify different types of stitch. - To explore and practise running stitch. - To discuss the life and artwork of Kazohito Takadoi.	- To investigate a range of books with moving parts and identify how they work. - To discuss how effective a mechanism is. - To explain how levers and linkages work. - To know how levers and linkages are used in everyday life (scissors, pliers, tongs, nail clippers, nutcrackers, greeting cards wheelbarrows) - To understand that different types of linkage will result in different movement. - To explore the work of Matthew Reinhart. - To understand the significance if the work of Archimedes (Greek philosopher of levers and pulleys)	- To identify how food is made to look appealing - To describe what a balanced diet is - To explore the history of bread - To taste some different types of bread from around the world
Design	- To know how to select materials and tools. - To take inspiration from an artist to inform my own designs. - To draw a labelled diagram, showing where stitches will be needed	- To identify design criteria. - To identify a purpose and audience for my design. - To create a labelled diagram, reflecting design criteria. - To explain how the moving parts will work.	- To choose a suitable shape, pattern and topping - To adapt a recipe - To draw a labelled design

		- To choose the most appropriate mechanism for my design. - To design a lever or linkages mechanism. - To make a prototype.	
Make	- To know how to thread a needle. - To design and cut out a leaf from fabric. - To add simple embroidered designs using running stitch. - To stitch neatly and securely. - To tie a knot in my thread. - To cut fabric safely and accurately. - To pin my design to a piece of fabric.	- To follow my design carefully. - To use scissors with accuracy and precision. - To use split pins to create a levers or linkages mechanism. - To measure accurately.	- To knead and shape bread to form a dough - To observe changes during the proofing process - To use the claw and bridge technique to cut harder foods - To use a grater safely - To read scales to weigh out my ingredients - To read the scale on a measuring jug to measure volume
Evaluate	To suggest improvements to products made and describe how to implement them.	To suggest improvements to products made and describe how to implement them.	To suggest improvements to products made and describe how to implement them.
Vocabulary	running stitch, binka, fabric, sewing, thread, needle, textiles, embroidery	linkage, lever, pop-up book, prototype, pivot, rigid, rotate, fulcrum, fixed, load	diet, ingredient, recipe, peeling, bridge and claw technique, grating, kneading, baking, combining, proofing

At the end of Year 3, a great design technologist can:

- ✓ Use a basic running stitch neatly and securely.
- ✓ Identify and produce moving mechanisms using levers and linkages.
- ✓ Weigh and measure ingredients accurately.
- ✓ Suggest improvements to products made and describe how to implement them.

Year 4 – Design and Technology Curriculum

Learning Theme	Groovy Greeks	The Invention of Hugo Cabret	Celts and Conquerors
Outcome	Cookery: Vegetable and feta tart	Mechanisms: CAMS toys	Structures: Bridges
Explore	- To understand and apply the principles of a healthy diet - To understand what seasonality is and know where and how a	To compare toys from the past to toys in the present day	To research and identify different types of bridge

	- variety of ingredients are grown, reared, caught and processed - To explore how herbs are used to alter the taste of a dish	- To explain how existing products work and are fit for purpose - To explore a range of cams and their resulting movement - To understand what cams and cam shafts are in mechanical systems - To know that Al Jazari invented the cam and cam shaft	- To understand how bridges have changed throughout history - To learn about the work and achievements of engineers Isambard Kingdom Brunel and Emily Roebling - To know that the ancient Romans were the first civilization to build large, permanent bridges - To explore which shapes are useful when building strong structures
Design	- To modify a recipe - To include a range of food groups in my recipe	- To produce a labelled diagram, keeping in mind purpose and intended effect - To design a moving toy which uses cams - To explain how my toy will move, based on the shape of the cams	- To generate a prototype bridge, showing awareness of how to strengthen, stiffen and reinforce - To use elements of bridges I have studied as part of my own design - To produce a labelled diagram with precise measurements - To explain in detail how I will ensure my bridge is strong
Make	- To use an oven safely - To use scales to measure ingredients accurately - To use the claw and bridge technique when cutting	- To use cams to make an object move - To select from and use a wider range of tools and equipment to cut, shape, join and finish - To join and reinforce materials securely - To ensure my product is aesthetically-pleasing - To use a hot glue gun safely to join components	- To select from and use a wider range of tools and equipment to cut, shape, join and finish - To use a ruler to measure and mark with precision - To use a hot glue gun safely to join components - To saw safely using a hacksaw
Evaluate	To identify what has worked well and what could be improved, evidencing and explaining thoughts	- To identify what has worked well and what could be improved, evidencing and explaining thoughts - To use subject vocabulary to describe and evaluate my product	- To describe how a product could be made better, stronger or more sustainable - To use subject vocabulary to describe and evaluate my product
Vocabulary	seasonality, modify, carbohydrates, protein, fat, pastry, dairy	aesthetic, rotation, cams, slider, snail cam, eccentric cam, linear motion, follower, component	beam bridge, suspension bridge, arch bridge, keystone, jinx corner, hacksaw, prototype
At the end of Year 4, a great design technologist can:			

- ✓ Understand what seasonality is and know where and how a variety of ingredients are grown, reared, caught and processed
- ✓ Understand how cam mechanisms work and use their knowledge to build a moving toy
- ✓ Talk about how design and technology has changed over time
- ✓ Use a range of tools with increasing precision and accuracy, including measuring equipment and hacksaws

Year 5 Design and Technology Curriculum

Learning Theme	Magical Muggles	The Truth is out There	The Explorer
Outcome	Textiles: House Banners	Mechanism: Moon buggies using electronic motors	Cookery: Brazilian Feijoada (stew with black beans)
Explore	- To learn to use running stitch, back stitch, blanket stitch and over stitch - To know how to apply applique to fabric - To thread a needle independently - To understand the advantages of the different stitches learnt - To understand how Stuart Craig designed sets for Harry Potter using a detailed design process and making prototypes	- To know what the purpose of a moon buggy is - To understand what a pulley is - To understand what a Lunar rover is and that Eduardo San Juan worked on the team that invented the Lunar Rover, or Moon Buggy - To identify key features of a moon buggy	- To understand how taste and texture can be influenced by spices - To understand how spices are added to food to increase flavour - To understand what seasonality is and compare the crops grown in the UK and Brazil - To name some crops we export to the UK from Brazil - To explore how Brazilian chef Janaína Torres has used her culinary talents to improve nutrition in schools and help her local neighbourhood
Design	- To generate multiple design ideas and choose the most effective one - To produce a labelled diagram, showing which stitches will be used for each part	- To model my ideas through annotated sketches and diagrams - To ensure that my design reflects the design brief - To label my design with specific measurements	- To explore how recipes can be modified and adapted to meet individual needs - To adapt a recipe to make it vegetarian - To know the difference between tbsp and tsp and can adapt these measurements in a recipe
Make	- To use running stitch, back stitch, blanket stitch and over stitch to join fabric - To apply applique to my design	- To select from and use a wider range of tools and equipment to cut, shape, join and finish - To create an electrical circuit with an electric motor	To select from and use a wide range of tools and ingredients to perform practical tasks

		- To use a sharp knife safely - To use a hacksaw safely - To use a hot gun safely to join components - To use a ruler to mark and measure accurately and with precision - To build a functional wheel and axle mechanism	- To measure mass and capacity accurately, reading and interpreting scales - To dice vegetables finely - To chop and peel hard vegetables - To know I need to taste my recipe during cooking to adapt the taste of spices - To fry vegetables safely on a hob
Evaluate	- To suggest ways to improve and evaluate my work throughout the designing and making process - To use evaluations as part of the problem-solving process to make changes to improve my product	- To use subject vocabulary to describe and evaluate my product - To suggest ways to improve and evaluate my work throughout the design and making processes - To use evaluations as part of the problem-solving process to make changes to improve my product	- To suggest ways to improve and evaluate my work throughout the design and making processes - To use evaluations as part of the problem-solving process to make changes to improve my recipe
Vocabulary	over stitch, applique, fabric, thread, sewing, back stitch, running stitch, textiles, blanket stitch	mechanism, chassis, Lunar rover, axle, moon buggy, motor, battery, circuit, design brief	hob, fry, seasonality, dice, peel, nutrition, crops, export, import, spices, flavour

At the end of Year 5, a great design technologist can:

- ✓ Understand that countries export goods to other countries due to various factors, including seasonality
- ✓ Join fabrics securely, using a range of stitches
- ✓ Apply their understanding of electricity to build a product with an electrical component
- ✓ Use a range of tools with precision and accuracy, including measuring equipment, knives and hacksaws

Year 6 Design and Technology Curriculum

Learning Theme	Toil and Trouble	Battle of Britain	Battle of Britain
Outcome	Tudor House	Rationed Meals	Lighthouse
Explore	- To investigate the design features of an existing product in the context of the culture or society in which it was built or made - To explore the work of some famous architects: Richard Norman Shaw, Stephen Sauvestre, Thomas Farnolls Pritchard	- To explain how ingredients were grown, reared, caught and processed during World War Two - To understand how certain ingredients could be substituted for others - To understand the rationing of food during World War Two	- To know what the purpose of a lighthouse is - To identify key features of a lighthouse - To look at the work of Robert Stevenson

	- To explore the use of different shapes to make a structure secure - To identify and apply different joining methods		
Design	- To draw a design from different perspectives - To build a prototype to check measurements - To draw detailed diagrams of my product, labelled clearly with precise materials and measurements - To design and formulate a step-by-step plan for construction.	- To plan a recipe to cook independently - To write a recipe that includes precise measurements (mass and capacity) - To write a detailed method, thinking carefully about the most appropriate equipment to use	- To use a CAD program to generate my design - To ensure that my design reflects the design brief - To label my design with specific measurements
Make	- To build a framework using a range of materials, measuring and marking to the nearest millimetre - To cut safely and accurately to a marked line using a hacksaw - To use a range of joining techniques to strengthen a structure	- To weigh, measure and combine ingredients according to a recipe - To use an oven independently - To use a hob independently - To cut and peel a range of ingredients safely and with precision	- To include a switch in my circuit - To create an electrical circuit with a bulb - To use a sharp knife safely - To use a hot gun safely to join components - To use a ruler to mark and measure to the nearest millimetre
Evaluate	- To suggest ways to improve and evaluate my work throughout the design and making process - To use evaluations as part of the problem-solving process to make changes to improve my product	To demonstrate modifications made to a recipe as a result of ongoing evaluation	- To suggest ways to improve and evaluate my work throughout the design and making process - To use evaluations as part of the problem-solving process to make changes to improve my product
Vocabulary	frame, reinforce, strengthen, architect, butt-joint, miter joint, adhesive, dowels, specification, scaled drawing, prototype	rationing, substitute, preserve, julienne	

At the end of Year 6, a great design technologist can:

- ✓ Apply their learning about cookery to write and make their own recipe
- ✓ Use precise measurements in designs and ensure that all parts of the final product are measured with precision
- ✓ Select tools independently and use a range of tools with precision and accuracy, including measuring equipment, knives and hacksaws
- ✓ Investigate the design features of an existing product in the context of the culture or society in which it was built or made