



The Erme Primary School

DESIGN TECHNOLOGY CURRICULUM OVERVIEW



“Enjoy failure and learn from it. You can never learn from success.” **James Dyson**

VISION Design and Technology is a motivational, robust and practical subject which develops a range of skills, transferable throughout the curriculum. Design and Technology encourages; creative and independent thinking, problem solving, questioning and research, purposeful designing, fine motor skills and the ability to effectively evaluate through reflective thinking and discussions. Design and Technology offers our pupils the opportunity to creatively problem solve both as individuals and as members of a team.

EYFS	EYFS R	Progress towards a more fluent style of moving, with developing control and grace. PD Develop their small motor skills so that they can use a range of tools competently, safely and confidently. PD Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor. PD Explore, use and refine a variety of artistic effects to express their ideas and feelings. EA&D Return to and build on their previous learning, refining ideas and developing their ability to represent them. EA&D Create collaboratively, sharing ideas, resources and skills. EA&D
	EYFS ELG	Use a range of small tools, including scissors, paintbrushes and cutlery. PD Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. EA&D Share their creations, explaining the process they have used. EA&D

Y1	Autumn	Spring	Summer
Unit Overview	Cooking and Nutrition: Smoothies Selecting fruit and vegetables and preparing food by cutting and juicing to create a smoothie to meet a design brief. https://www.kapowprimary.com/subjects/design-technology/key-stage-1/year-1/cooking-and-nutrition-smoothies/	Mechanisms: Wheels and Axles Developing an understanding of how wheels, axles and axle holders work while practising cutting straight and curved shapes with scissors. https://www.kapowprimary.com/subjects/design-technology/key-stage-1/year-1/option-1-wheels-and-axles/	Textiles: Simple Stitches Examining fabrics, practising basic sewing techniques and identifying how different materials are made from threads. https://www.kapowprimary.com/subjects/design-technology/key-stage-1/year-1/textiles/textiles-simple-stitches/
Key Outcomes	Describe fruits and vegetables and explain how to identify fruits. Name a range of places that fruits and vegetables grow. Describe basic characteristics of fruit and vegetables. Prepare fruits and vegetables to make a smoothie.	Choose and use the most suitable tool for cutting out different shapes accurately. Test and compare wheels of different shapes, thicknesses and smoothness. Estimate the middle of a circle. Design, draw and label a product that uses a simple mechanism. Identify the needs of the user. Make and finish a simple pull-along toy. Evaluate a product against simple design criteria and provide feedback.	Name some objects made of fabric. Describe the look and feel of different fabrics. Thread a needle. Make a series of stitches that match each other in embroidery fabric. Choose colours and shapes for a design. Explain their ideas to others verbally and with a sketch. Choose materials based on their texture. Follow the general position of the lines of a design with stitches. Say what they like about someone else's stitching and what could be made better.
Small Steps	Fruits: To identify fruits. Growing: to describe where fruits and vegetables grow. Cutting and juicing: To practise food preparation skills. Testing ingredients: To select ingredients for a recipe. Making smoothies: To apply food preparation skills to a recipe. Evaluating: To evaluate against the design brief.	Wheels: To develop cutting skills by shaping wheels. Improving Wheels Part 1: to refine cutting skills by shaping round wheels. Improving Wheels Part 2: To evaluate by comparing and discussing different wheel designs. Designing a pull-along toy: to create a design by drawing plans for a pull-along toy. Make a pull-along toy: To apply finishing techniques by decorating a pull-along toy.	What is fabric? To explore how fabrics are made and used. Making stitches: To thread a needle and make stitches. Designing bunting: To sketch a design for a piece of bunting. Stitching a design: To stitch a design for a piece of celebratory bunting. Finishing and evaluating: To finish a design of stitches and evaluate.
Key Vocabulary	blend, blender, chopping board, compare, cut, design, evaluate, flavour, fork, fruit, healthy, ingredients, juice, juicer, leaf, plant, recipe, root, seed, select, smoothie, stem, table knife, taste, tree, vegetable, vine	axle, axle holder, better, careful, choose, compare, design, dislike, like, mechanism, movement, product, straight line, tool, turn, user, wheel, worse	design, even, fabric, like, needle, sketch, stitch, thread

Y2/3	Autumn A	Spring A	Summer A	Autumn B	Spring B	Summer B
Unit Overview	Structures: A Chair for a Bear Investigating strong shapes and the properties of stiff and flexible materials by designing a chair inspired by the story 'There's a Bear on My Chair'. https://www.kapowprimary.com/subjects/design-technology/key-stage-1/year-2/structures/structures-a-chair-for-a-bear/	Cooking and Nutrition: Eating Seasonally Investigating seasonal food in the UK and applying pupils' understanding to create a seasonal food tart. https://www.kapowprimary.com/subjects/design-technology/key-stage-2/year-3/cooking-and-nutrition-eating-seasonally/	Mechanical Systems: Pneumatic Toys Investigating how compressed air can create movement within a mechanism and be used in a working pneumatic toy. https://www.kapowprimary.com/subjects/design-technology/key-stage-2/year-3/new-mechanical-systems-pneumatic-toys/	Textiles: Pouches Developing basic sewing skills by learning how to create templates, cut fabric accurately and sew a running stitch. https://www.kapowprimary.com/subjects/design-technology/key-stage-1/year-2/textiles-pouches/	Cooking and Nutrition: Balanced Diet Discovering the importance of a balanced diet and creating a tasty, balanced wrap to meet a design brief. https://www.kapowprimary.com/subjects/design-technology/key-stage-1/year-2/cooking-and-nutrition-balanced-diet/	Structures: Product Packaging Exploring how 3D shell structures are created from nets, investigating their use in packaging and applying this understanding to create original designs. https://www.kapowprimary.com/subjects/design-technology/key-stage-2/year-3/structures/structures-product-packaging/
Key Outcomes	Describe how chairs are made for different users and purposes. Explain how design briefs and design criteria help when making a new product. Name some shapes that are stronger than others. Describe how making a material thicker makes it more stiff. Understand and use the vocabulary of strong, weak, stiff and flexible. Make a stable chair structure for a particular user. Select suitable materials and join them securely. Evaluate a product against the design criteria. Improve parts of a product based on the design criteria.	Explain that fruits and vegetables grow in different countries based on their climates and identify which grow where. Understand that seasonal fruits and vegetables grow in a given season and that eating them in season positively affects the environment. Identify which foods grow in which season and find recipes that contain seasonal foods. Know that importing food impacts the environment. Identify the equipment used to prepare food and explain why food needs to be prepared safely. Describe the taste of various fruits and vegetables and identify flavours. Design a seasonal dish and describe the ingredients' nutritional benefits. Evaluate the dishes and give and receive feedback to identify strengths.	Define a mechanism as a system of parts working together to create movement and a pneumatic system can be used as part of this. Describe how a pneumatic system forces air over a distance to create movement and identify pneumatic systems in a range of everyday objects. Describe different types of drawings used in design to explain ideas clearly and explain why one may be more useful for a particular situation. Develop design criteria from a design brief. Begin to draw different types of diagrams to generate suitable ideas. Recall different types of pneumatic systems used to design a toy and create one for a specific movement. Build secure housing for a pneumatic system, consider sustainable resources and work with materials to create different effects by cutting, creasing, folding, etc. Evaluate how well the design, materials and equipment help to achieve the design brief.	Sew a running stitch with regular-sized stitches and understand that both ends must be knotted. Prepare and cut fabric to make a pouch from a template. Use a running stitch to join the two pieces of fabric together. Decorate their pouch using the materials provided.	Name the main food groups and identify foods that belong to each group. Describe the taste, feel and smell of a given food. Think of three different wrap ideas, considering flavour combinations. Construct a wrap that meets the design brief and their plan.	Investigate and analyse a range of existing packaging products, identifying shapes, form and function. Evaluate what makes good packaging and what shapes suit which products. Design, make and evaluate product packaging, following a design criteria. Use CAD software (Sketchpad) to create 2D shapes that form the net of 3D shapes, including the tabs. Give and receive feedback and identify errors in nets to help suggest improvements. Cut, fold and stick the parts of a net together to make a 3D shape. Use ribbing to strengthen packaging. Decorate packaging with an intentional design that shows its function.

Small Steps	All About Chairs - To evaluate existing structures. How does the shape of something affect its strength? To explore how shape affects the strength of a tower. How does the thickness of a material affect its strength? To explore how thickness affects the strength of materials. Making a chair for a bear – To make a strong and stable chair for a user. Evaluating, improving and finishing a chair for a bear – To evaluate and improve a structure.	Food Around the World – To explain why food comes from different places around the world. Seasonal Food – To explain the benefits of seasonal foods. Cutting and peeling – To develop cutting and peeling skills. Tasting seasonal ingredients – To evaluate seasonal ingredients. Making a mock-up – to design a mock-up using criteria. Evaluating seasonal tarts – To evaluate a dish.	Exploring Pneumatics: To explore how pneumatic systems create movement within mechanisms. Drawing diagrams: To use different types of diagrams to summarise information. Designing a pneumatic toy: to design a toy that uses a pneumatic system. Making a pneumatic toy: To create a pneumatic system for a moving toy. Finishing the toy: To test and finalise ideas against design criteria.	Running stitch – To sew a running stitch. Using a template – To sew a running stitch. Making a pouch – To join fabrics using a running stitch. Decorating a pouch – To decorate a pouch using fabric glue or stitching.	Food Groups – To recognise foods and their food groups. Balanced meals – To identify the balance of food groups in a meal. Preparing ingredients – To identify an appropriate piece of equipment to prepare a given food. Taste testing ingredients – To select balanced combinations of ingredients. Planning recipes – To design based on criteria. Creating and evaluating wraps – To evaluate a dish based on design criteria.	Exploring product packaging – To evaluate how 3D shapes are used in product packaging. Using nets – To design nets for 3D product packaging. Reviewing designs – to review and improve net designs for packaging. Making 3D packaging – To make 3D structures to package a healthy snack. Decorating and evaluating – To use a design brief to finalise and evaluate packaging.
Key Vocabulary	design brief, design criteria, evaluate, flexible, improve, select, stiff, strong, thicker, thinner, weak	Appearance, arid, climate, complementary, country, cut, design, evaluate, export, fruit, grate, import, ingredients, Mediterranean, mock-up, mountain, peel, polar, seasonal, seasons, snip, taste, temperate, texture, tropical, vegetable, weather	diagram, evaluate, feedback, housing, linkage, mechanical, system, mechanism, pivot, pneumatic system, thumbnail sketch	decorate, fabric, fabric glue, knot, needle, needle threader, running stitch, sew, template, thread	appearance, balanced, carbohydrates, chopping board, combination, cut, dairy, design, design brief, diet, evaluate, feel, fruit, grate, grater, ingredients, menu, oils, proteins, review, scissors, smell, snip, spread, spreads, table, knife, taste, vegetables	computer-aided design (CAD), feedback, form, function, net, shell, structure, tab, three-dimensional (3D)

Y4/5	Autumn A	Spring A	Summer A	Autumn B	Spring B	Summer B
Unit Overview	Mechanisms: Mechanical Cars Exploring mechanical systems by building and testing prototype cars to identify effective design features. https://www.kapowprimary.com/subjects/design-technology/key-stage-2/year-4/mechanical-cars/	Textiles: Stuffed Toys Developing textile and sewing skills by designing and making a stuffed toy using fabric and decorative techniques. https://www.kapowprimary.com/subjects/design-technology/key-stage-2/year-5/textiles-stuffed-toys/	Cooking and Nutrition: Adapting a Recipe Learning a basic biscuit recipe and adapting it for a new audience while considering the cost of ingredients and other expenses against a set budget. https://www.kapowprimary.com/subjects/preview-units/design-and-technology/key-stage-2/year-4/cooking-and-nutrition-adapting-a-recipe-y4/	Structures: Helmets Designing and making a helmet, using strengthening techniques to reinforce the shell structure. https://www.kapowprimary.com/subjects/design-technology/key-stage-2/year-4/structures/structures-helmets/	Electrical Systems: Wobble Bots Building on existing knowledge of circuits by introducing motors and exploring how they create movement in products. https://www.kapowprimary.com/subjects/design-technology/key-stage-2/year-5/electrical-systems/electrical-systems-wobble-bots/	Cooking and Nutrition: Developing a Recipe Considering how recipes can be adapted to improve nutritional value by modifying a traditional Bolognese sauce. https://www.kapowprimary.com/subjects/design-technology/key-stage-2/year-5/new-cooking-and-nutrition-developing-a-recipe/
Key Outcomes	Describe key design improvements in the history of the automobile. Measure and compare the distance travelled by different mechanical cars. Choose and use appropriate tools and materials to make mechanical cars. Draw exploded diagrams and annotated sketches of my different mechanical cars. Use a problem statement to identify the design criteria. Assess the product against the design criteria. Conduct market research into existing products. Provide specific feedback and adjust my design to incorporate customer feedback.	Design a stuffed toy, considering the main component shapes of their toy. Create an appropriate template for their stuffed toy. Join two pieces of fabric using a blanket stitch. Neatly cut out their fabric. Use appliqué or decorative stitching to decorate the front of their stuffed toy. Use blanket stitch to assemble their stuffed toy, repairing when needed. Identify what worked well and areas for improvement.	Describe features of biscuits using taste, texture and appearance. Explain why some biscuits might be made for children, adults or special occasions. Remember and follow simple rules for working in a safe and clean way. Follow a recipe with support. Use a budget to plan a recipe. Adapt a recipe using additional ingredients to fit a design or budget. Measure and mix ingredients properly. Contribute to a discussion about criteria for evaluation.	Describe what a shell structure is and describe what makes an effective helmet. Design a helmet for a specific user by choosing appropriate features. Explain layering techniques used to strengthen a helmet. Use layering techniques to make a helmet and reflect on the process. Evaluate the strengthening required in the helmet and justify appropriate strengthening techniques. Follow a design plan and use appropriate techniques to strengthen and stiffen the helmet. Communicate with peers when making improvements. Analyse helmets' strengths and weaknesses and evaluate how they work for their purpose.	Identify some simple elements of a circuit (battery, wires, bulb, motor and switch) and explain their function. Explain that for electricity to flow around a circuit, it must be closed. Describe a motor as an electrical circuit component that changes electricity into movement. Provide examples of motorised products that use movement to rotate or spin different parts. Make a product that uses a motor. Design a motorised product for a particular purpose. Determine appropriate design criteria based on the function of the proposed product. Explain design choices based on the desired functionality of a product. Create an innovative motorised product based on knowledge of existing products. Discuss the effectiveness of a product while considering the design criteria.	Describe the process of beef production. Research a traditional recipe and make changes to it. Add nutritional value to a recipe by selecting ingredients. Prepare and cook a version of bolognese sauce.

Small Steps	Prototype one: Inclined Plane – To build a simple prototype car chassis. Prototype two: Slingshot Car – To build a prototype of a sustainable slingshot car chassis. Prototype three: Wind-up Car – To build a prototype of a durable slingshot car chassis. Mechanical toy car kit: Designing – To design a mechanised toy car. Mechanical toy car kit: Making and Evaluating – To make a mechanical toy car from a kit.	Designing a stuffed toy – To design a stuffed toy. Blanket stitch – To sew a blanket stitch. Details and appendages – To create and add decorations to fabric. Stuff toy assembly – To use a blanket stitch to assemble the components of a stuffed toy.	Existing Biscuits: To evaluate existing biscuit products. Basic Biscuits: To prepare and cook a dish. Budgeting: To select ingredients and follow a budget. Packaging: To take inspiration from existing products. Testing a new recipe: To make and test a prototype biscuit. Evaluating biscuits: To evaluate a final product.	Exploring shell structures: To explore shell structures and design my own. Making papier-mâché shells: To make the shell of a helmet. Strengthening techniques: To assess how a helmet structure needs to be strengthened. Strengthening shell structures: To strengthen the helmet shell structure. Evaluating shell structures: To evaluate the effectiveness of strengthening the helmet.	Circuits and motors – To investigate by creating circuits. Meet the Kapow Doodlers – To make a motorised product and test its function. Exploring wobble bots – To apply knowledge of circuits to experiment with product design. Designing a wobble bot for a purpose – To design a motorised product for a specific purpose. Making and evaluating a wobble hat – To make and evaluate the effectiveness of a motorised product.	From Farm to Fork – To understand how ingredients are reared and processed. Different choices – To make adaptations to design a recipe. Nutritional Value – To evaluate nutritional content. Preparing Ingredients - To practise food preparation skills. Designing labels – To design a product label. Making Bolognese – To follow and make an adapted recipe.
Key Vocabulary	bearing, chassis, force, machine, mechanism, prototype, target, audience	accurate, annotate, appendage, blanket-stitch, design criteria, detail, evaluation, fabric, sew, shape, stuffed toy, stuffing, template	cut, design, evaluate, fold, hygiene, ingredients, layout, market research, modify, multiplication, opinion, pounds, sieve, sift, target audience, taste, texture, unique, wooden spoon	analyse, effective, iteration, reflect, strengthen	annotate, assemble, electrical component, motor, battery, circuit, electricity	abattoir, adaptation, balanced, beef, brand, cook, cross-contamination, cut, design, enhance, equipment, evaluate, farm, grate, hygiene, ingredients, label, measure, nutrient, nutrition, nutritional value, preference, press, process, recipe, safety, theme

Y6	Autumn	Spring	Summer
Unit Overview	Structures: Playground Pioneers Investigating how playground structures are designed and reinforced through using triangulation and computer-aided design. https://www.kapowprimary.com/subjects/design-technology/key-stage-2/year-6/structures/structures-playground-pioneers/	Cooking and Nutrition: Come Dine with Me! Developing food preparation and evaluation skills by researching and preparing a three-course meal. https://www.kapowprimary.com/subjects/design-technology/key-stage-2/year-6/new-cooking-and-nutrition-come-dine-with-me/	Textiles: Bags Designing pattern pieces, making a bag for a specific user and thinking about aesthetics and functionality. https://www.kapowprimary.com/subjects/design-technology/key-stage-2/year-6/textiles-bags/
Key Outcomes	Explain the term constraints and why some are more important than others. Use sketches with labels to communicate ideas. Use 3D CAD software to communicate ideas. Modify a design to make it stronger and more stable using knowledge of triangulation and reinforcing. Select appropriate materials and tools for cutting and joining. Make a plan and equipment list for a project. Reinforce and stabilise a prototype of a structure. Apply a quality finish in a neat way and explain why the finish is important. Critically evaluate the success of a structure within constraints and suggest alternative, more sustainable, materials. Explain design decisions.	Find a suitable recipe for their course. Record the relevant ingredients and equipment needed. Follow a recipe, including using the correct quantities of each ingredient. Write a recipe, explaining the process taken. Explain where certain key foods come from before they appear on the supermarket shelf.	Explore and compare real textile products, thinking about how they look, how they are used and how they affect the environment. Develop and test design ideas by creating pattern pieces and making prototypes to explore how well they work. Use labelled drawings and diagrams to show clear design ideas, including how pattern pieces will fit together. Use fabrics and materials suitable for the product, thinking about how they look and how well they work. Make 3D textile shapes by carefully cutting, folding and joining materials to match the design. Join fabrics securely using stitches or knots and add decorative details to improve the appearance. Use pins, scissors and other tools carefully to keep fabric flat and measure and cut accurately. Evaluate how well the final product meets the design criteria and suggest improvements.
Small Steps	Playground Design Challenge – To generate ideas for a playground structure by considering relevant constraints. Designing Structures with Tinkercad – To create a prototype using Tinkercad. Making a Prototype of a playground structure – To construct a scale prototype of a playground structure. Finishing a Prototype of a Structure – To complete a structure prototype and improve its appearance. Prototype Evaluation – To evaluate a prototype of a playground structure.	Complementary flavours – To explain the use of complimentary flavours. Three Ingredients, Three Courses – To research and design a three-course meal. Ingredients and Skills – To explain recipe choices. To start... - To apply culinary skills and knowledge. The Main Course – To apply culinary skills and knowledge. Dessert – To apply culinary skills and knowledge.	Deconstructing a Bag – To explore how pattern pieces are used to design and make fabric items. Pattern pieces – To use pattern piece templates to shape, cut and stitch fabric. Designing a Bag – To design a bag and create the prototype pattern pieces. Making a Bag Prototype – To create a prototype bag from a design sketch. Adding Features – To add features to a bag.
Key Vocabulary	aesthetic, alternative, constraint, innovate, reinforce, triangulation, prototype	balance, bitter, bridge method, complement, cookbook, cross-contamination, enhance, equipment, farm to fork, flavours, ingredients, method, pairing, preparation, recipe, research, salty, sour, storyboard, sweet, umami	innovative, pattern piece, seam allowance, stitch, cut, shape, prototype, features