





Design and Technology Subject Profile












Subject Lead background: As a child I loved D&T at secondary school and remember designing and making a functioning coin sorter for small businesses. I had an uncle who encouraged me to work out how things worked by taking them apart. He showed me his own pressure pad alarm system he made for his family's London flat. In adult life I became a self taught woodcarver, making figurative art from roots, trees and climbing plants of varying sizes. I had exhibitions and display work in Highwoods and Lexden Park in Colchester and Jimmys Farm in Suffolk. I enjoy contributing to our LOtC practice through our planned outdoor learning environment; engraving signs, erecting the weather vane, making the workbenches and progressive tool stations.




Additional design team... Forest Session Leads (HLTA and LSA) - passionate & experienced gardeners, one also with previous employment as a Chef. (Growing seasonal food and cooking in the Forest: 'From Field to Fork'). Both with Risk-Benefit-Assessment (RBA) training. Worked with Essex Wildlife Trust and LOtC Ed. Consultant Felicity Robinson regularly across many academic years. D&T Lead currently training Forest Lead with tool progression.



Reading - Design Room 'From Field to Fork' Display and Where Food Comes From and Health Eating (Milestone 1 and 2) posters displayed (Food a Fact of Life, British Nutrition Foundation) **Designer Knowledge Organiser: Inventors, Types of Design and Technical Language** used into planning (themes)
Classrooms - **Core Read-Aloud Stories, Non-Fiction and Poetry** **Tier two words: design, make, evaluate**

Objectives Coverage (compiled from the National Curriculum)	Designer Strands (pupil-friendly 'subject keys' to unlock key skills and knowledge)	HH Learning Experience Context, Phase/Term taught and Progression (2 year creative curriculum cycle per phase KS1 (Year 1 and 2) LKS2 (Year 3 and 4) UKS2 (Year 5 and 6) Au: autumn terms, Sp: spring terms Su: summer terms)
<p>EYFS Expressive Arts and Design</p> <ul style="list-style-type: none"> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function <p>KS1 1. To begin to cook, understand healthy eating, and where food comes from 2. Choose and use basic tools and equipment Explore a wide range of materials</p>	<p> Cooking</p> <ul style="list-style-type: none"> including nutrition & source of ingredients <p>'Field to Fork' display - Design Room 'spiral curriculum' memory jogger</p> <ul style="list-style-type: none"> Where Food Comes From (Milest...) Where Food Comes From (Milest...) Healthy Eating (Milestone 1).pdf Healthy eating and physical activit... <p>Cooking Sites </p> <ul style="list-style-type: none"> Design Room (classroom) The Forest (on-site) 	<p>Pancakes - EYFS Sp1 (Amazing Activities) and Healthy Dinner (early design) - EYFS Sp2 (Come Outside)</p> <p>Banquet (cheese, bread & fruit) and discussing fish, farm animals and birds e.g. pheasants - KS1 A1 (Castles) (Where possible: Banquet to include cutting and buttering mastery - cheese & bread - and taste-testing)</p> <ul style="list-style-type: none"> <i>English instructions</i> writing and baking bread practical <p>Salt-dough eggs - (inedible) early principles of cooking - ingredients, instructions etc - KS1 Sp1 (Dinosaurs)</p> <ul style="list-style-type: none"> <i>Science nutrition - grow salad, made a sandwich: cutting, spreading skills</i> <p>Fish Platter - buttering and cutting bread Cod, krill, shrimp, ocean life - source of ingredients and science habitats KS1 A2 (Penguins)</p> <p>Baking chocolate cupcakes or make own chocolate bar - ingredients cocoa world map (equator) LKS2 A1 (Charlie and The Chocolate Factory)</p> <p>Making hard-tack biscuits: historical context ships and storage - Science link LKS2 Sp1 (Pirates)</p> <ul style="list-style-type: none"> <i>Art Profile</i> - growing cress - Tudor Knot Garden design - LKS2 Su1 (The Tudors) <i>History Profile</i> - Layer Marney - historical context food - LKS2 Su 1 (The Tudors) <p>Egyptian Flat bread - LKS2 A2 (Egyptians)</p> <p>Chinese savoury dish - vegetables, noodles, tofu, scrambled eggs, juice - UKS2 Su1 (Around the World)</p>

<p>3. To learn technical knowledge</p> <p>4. To design functional and appealing products</p> <p>5. Explore and use simple structures and mechanisms</p> <p>6. To evaluate products including your own</p> <p><u>KS2</u></p> <p>1. Cook a variety of dishes and know exactly where the ingredients have come from</p> <p>2. Choose and use a wide range of tools, equipment and materials</p> <p>3. Use electrical systems and computer programming in product designs</p> <p>4. Develop a design criteria to inform functional and appealing products (and review)</p> <p>Generate, develop, model and communicate ideas in a variety of ways</p> <p>5. Build and explore complex structures and mechanical systems</p> <p>6. Evaluate the world-wide impact of key events and people</p>	<p>On-site Growing Plots </p> <ul style="list-style-type: none"> - The Haven - Herb Garden - The Forest - Seasonal fruit and vegetables 	<p>WW2 savoury recipes (stew) using some ingredients grown in school grounds  - UKS2 A2 (War and Conflict)</p> <p>'Forest sessions' - 3 sessions per term </p> <ul style="list-style-type: none"> - Ongoing growing of herbs and seasonal fruit and vegetables - Saviour dish for example vegetable stir fry - home-grown leeks or cooking chickpea curry and 'how to build a fire' LKS2 - discussion/observation and UKS2 Su1 and Su2 with an additional practical element <p>Whole-school annual gardening project: bulb lasagnes and Amaryllis flower  <i>science longitudinal studies</i></p> <p>Whole-school annual 'Williams Cup' Class Potato Growing Competition </p> <p>Example of UKS2 Flexi-week matched themed curriculum  Homework Hub Anzac Biscuits and Fair Bread</p>
	<p> Tools, Equipment and Materials</p> <p>Tool Stations </p> <ul style="list-style-type: none"> - Mini tool station in EYFS - Loose parts Year 1 'discovery time' - Forest: 'Tool Station' with various woodwork tools <p>+ Forest: Cooking on the fire</p> <p>Building </p> <p>EYFS: Construction Barn Forest: Den-building</p> <p> Our Outside Classrooms</p> <p> Designer Knowledge Organiser: I... Types of design and technical language</p>	<p><u>Cooking</u></p> <p>Introduction to mixing and weighing out ingredients (modelled/supported) - EYFS Sp1 (Amazing Activities)</p> <p>Baking bread - mixing, stirring, bowls, rolling pins etc. KS1 A1 (Castles) <i>English - Instructions Writing 'what you will need' and the 'steps' using tools etc</i></p> <p><i>Science - Plants Unit</i> Growing Cress and making an egg salad sandwich: knife for buttering and cutting KS1 Sp1 (Dinosaurs)</p> <p>Mixing bowls, spoons, rolling pin, kneading dough, knife for cutting LKS2 A2 (Egyptians)</p> <p>Forest Sessions - eating wraps and understanding of 'fire' and tools/equipment for cooking outside (modelled leading to small-groups) Den-building progression and tool-use in the station - KS2</p> <p>Cutting, frying, stirring: chopping boards, knives, frying pans, wok, serving spoon UKS2 Su1 (Around the World)</p> <p>Boiling, frying, peeling and cutting: chopping boards, saucepan, knives, serving spoon UKS2 A2 (War and Conflict)</p> <p><u>Sewing</u></p> <p>Sewing: weaving binca canvas/hole-punched plastic sheets material or ribbon, wool or paper simple pattern / straight lines - 'tapestries' KS1 A1 (Castles)</p> <ul style="list-style-type: none"> - <i>English 'The Rainbow' - weaving KS1 Su1 (Under the Sea)</i> <p>Sewing: needle and embroidery thread, calico material - running stitch - rainforest stuffed toy LKS2 Sp2 (Rainforests)</p> <p>Sewing: needle and thread, blanket stitch 2 layers felt - stuffed alien toy UKS2 Sp1 (Out of this World)</p> <p><u>Craft / Moving Parts</u></p> <p>Junk-modelling: cardboard tubes etc KS1 Sp1 (Dinosaurs)</p> <p>Roly Poly Project: joining, fixing, attaching - different movements KS1 Su2 (Minibeasts)</p> <p>Hogwarts Express-cutting /sticking materials onto 5 of the faces of the box, then working the dowel axles through the open face for the wheels.- KS1 Sp2 (Wizards)</p>

		<p>A moving picture - levers and wooden dowels - LKS2 Sp1 (Pirates)</p> <p>Train Carriages - glue-gun, wooden rods, wooden dowel, hack-saw, corner triangles, bench-hook - UKS2 A1 (Victorians)</p> <p>Knots: hitches and lashings for twig 'star' - UKS2 Sp1 (Out of this World)</p> <p>Electric Quizboard: polystyrene boards, electrical wire and tape, glue-gun, batteries - UKS2 Su1 (Around the World)</p> <p>Roman House - balsa wood for wooden frames, measuring tiles, cutting, joining, strengthening (and clay to add details such as pot plants etc for the villa) UKS2 Sp2 (Pompeii)</p>
	<p> Technical Knowledge</p> <p> Designer Knowledge Organiser: I... Technical Language/Vocabulary</p>	<p>Junk modelling 'dinosaur' securing attachments (glue and sellotape), cutting KS1 Sp1 (Dinosaurs)</p> <p>Roly poly - securing different joins etc KS1 Su2 (Minibeasts)</p> <p>Hogwarts Express-moving parts-axles and wheels KS1 Sp2 (Wizards)</p> <p>Levers - context of moving picture - LKS2 Sp1 (Pirates)</p> <p>Joins 'but' and 'mitre' - UKS2 A1 (Victorians)</p> <p>Knots: hitches and lashings - UKS2 Sp1 (Out of this World)</p> <p>Roman House - balsa wood for wooden frames, measuring tiles, cutting, joining, strengthening (and clay to add details such as pot plants etc for the villa) UKS2 Sp2 (Pompeii)</p> <p>Bridges: pillars, beams, trusses, arches, suspension bridges, strengthen, weight UKS2 Su2 (Australia)</p> <p>Sewing: 'running, blanket stitch' and process of sealing after stuffing inside of toy - KS2</p>
	<p> Design</p> <p>- including design criteria and its review</p>	<p>Junk Modelling - EYFS (Continuous Provision)</p> <p>Hogwarts Express train - discuss the design before making - and Wizard's hat KS1 Sp2 (Wizards)</p> <p>Design Minibeast functional product - Roly Poly Project: KS1 Su2 (Minibeasts)</p> <p>Packaging for a chocolate bar - 3 ideas and final design process. Vocabulary: 'product' and 'branding'. Introduction to market research 'customer/consumer' packaging details and concept LKS2 A1 (Charlie and The Chocolate Factory)</p> <p>- <i>Geography Profile</i> <i>trade/economy 'fair trade' cocoa</i> LKS2 A1 (Charlie and The Chocolate Factory)</p> <p>Moving picture: research, sketch, mock-up, paper prototype process - LKS2 Sp1 (Pirates)</p> <p>Poisonous Dart Frog bean bag: 4 designs and final choice - LKS2 Sp2 (Rainforests)</p> <p>Train carriage mood boards and Computer Aided Design (CAD) - UKS2 A1 (Victorians)</p>

Alien soft-toy for a younger child: moodboards, design specification, template for prototype - UKS2 Sp1 (Out of this World)

Electric Quizboard - electrical systems in design product - UKS2 Su1 (Around the World)


Roman house mood board: materials and styles and sketch house - UKS2 Sp2 (Pompeii)



Make

- including communicating ideas in different ways

Further application

-
- LOfC Forest  Experimentation loose parts and 'ToolStation' - woodwork (joining)

Extracurricular club

- programming

 Designer Knowledge Organiser: I...

CP Blocks, large Lego, Construction Barn area, Mud Kitchen Barn, Sand Pit EYFS (Continuous Provision)

- *Science / Writing - Year 1 adapted 'discovery time' approach*
Building castles out of plastic, wood and ice

Basic Skills: measuring, cutting, joining - note pre-teaching assessment lessons to be added for the following planning based on assessments - below ARE (2 per phase)

- *English and Forest Sessions (PPA)*
Loose parts castles linked to English/forest session - exploratory activities for joining wood and other materials KS1 A1 (Castles)

Vessel - KS1 Su1 (The Seaside)

Make a wizard's hat KS1 Sp2 (Wizards)

Dinosaur junk-modelling - cutting, securing, glueing KS1 Sp1 (Dinosaurs)

Packaging for a chocolate bar - net shapes (craft skills: tabs, glueing and cutting accurately), colours, branding etc LKS2 A1 (Charlie and The Chocolate Factory)

Cutting string, create a print block (glueing etc) - LKS2 Su2 (Inventors)

Roman house (villa) - house and roof (measure and outline individual tiles) paint - add details with balsa wood for windows/door frames, balcony etc UKS2 Sp2 (Pompeii)

Suspension-bridge models and experimenting with different arches and trusses to strengthen a bridge UKS2 Su2 (Australia)





Sewing

- Bayeux Tapestry - weaving - KS1 A1 (Castles)
- Poison Dart Frog soft-toy - running stitch 1 layer of felt (thick cotton muslin - calico) - LKS2 Sp2 (Rainforests)
- Alien soft toy - blanket stitch 2 layers of felt - UKS2 Sp1 (Out of this World)

Moving Parts 'Cause and Effect'

Make Minibeast product - Roly Poly Project: KS1 Su2 (Minibeasts)

Hogwarts Express train - draw windows, use net of 5 faces for possible challenge, stick on box, make hole for axle, push dowel through and push wheels on - KS1 Sp2 (Wizards)

		<p>A moving picture - levers and wooden dowels - LKS2 Sp1 (Pirates)</p> <ul style="list-style-type: none"> - <i>English - Kapok Tree pop-up picture - Sp2 LKS2 (Rainforest)</i> <p>Train carriages mock-up and wooden frames; tool-use, strengthen with card triangles(sawing and glue-gun) - UKS2 A1 (Victorians)</p> <p>Electric Quizboard e.g. countries to flags - UKS2 Su1 (Around the World)</p>
	<p> Evaluate (tier 2 word)</p> <ul style="list-style-type: none"> - including the impact of world events and inventions <p></p> <p> Designer Knowledge Organiser: I... Inventors and Impact</p> <p> Spiral Curriculum Concept Map - ... Trains and the Coastline</p>	<ul style="list-style-type: none"> - <i>History - reference to trains - pre cars - and their role in holiday-makers coming to the seaside (Holland/Clacton-on-sea) KS1 Su1 (The Seaside)</i> <p>Hogwarts Express Train - real-life designs and own designs; evaluate own product against class success criteria: looks like original, carriage link, wheels spin easily... KS1 Sp2 (Wizards)</p> <p>Transport: Japanese bullet train, Leonardo Davinci's inventions - early flying machine etc (<i>English The Write Stuff unit</i>) LKS2 Su2 (Inventors)</p> <ul style="list-style-type: none"> - <i>History Profile</i> <i>Stone Age to Iron Age including tool-use and the impact of these changes LKS2 Su2 (Inventors)</i> <p>'Archimedes Screw' - earliest hydraulic machines LKS2 A2 (Egyptians)</p> <p>George Stephenson, inventor of the steam train (ref. bridges) - UKS2 A1 (Victorians)</p> <ul style="list-style-type: none"> - <i>Computing/PSHE Robots AI ethics - impact of large digital companies on the world, e.g. Google and the role of AI UKS2 Sp1 (Out of this World)</i> - <i>History/R.E.</i> <i>Islamic Golden Age - science, economic, cultural, design developments UKS2 workshops and performances to beach hut houses (whole school) UKS2 (Around the World)</i> <p>Sydney Harbour Bridge design - world's largest steel arch bridge UKS2 Su2 (Australia)</p> <p><u>Own Work</u> (In addition to the opportunities below where pupils evaluate the final product, pupils also 'review and adapt own work' during the making process for each product)</p> <p>See above - Hogwarts Express Train - Sp2 KS1 (Wizards) Roly Poly Project: exploring the effectiveness of minibeast's movement KS1 Su2 (Minibeasts) Poisonous Dart Frog soft toy - LKS2 Sp2 (Rainforests) Alien soft-toy including feedback from users - UKS2 Sp1 (Out of this World)</p>

[Home-School Projects](#)

Example of UKS2 Flexi-week matched themed curriculum  Homework Hub Anzac Biscuits and Fair Bread

Educational Impact



Substantive Knowledge

How to cook savoury dishes: potatoes, ploughman's lunch, fish platter, trench stew, stir-fries wrap and noodles, chickpea curry

How to bake/prepare other items: pancakes, chocolate bar/cupcake, bread, fruit kebab, hard-tack biscuits

How to grow vegetables including potatoes, leeks and cress, herbs and flowers

Understand how electric quiz boards, knots, joins, bridges and leavers work and stuffed toys are made.

Know about the impact of inventors Leonardo DaVinci and George Stevenson and that Sydney Harbour bridge (Brunel) is the largest steel arch bridge in the world.

Digital thread: History of storytelling (KS1), Inventors - technology (LKS2), Robots - Space / AI 'Google' (UKS2)



DT Matrix

Disciplinary Knowledge leading to Skills Acquisition

How to cook (knead, cut, butter, stir, fry, boil, peel..)

How to sew ('single, running and blanket stitch' using needle and thread)

How to tie knots (hitches and lashings), join (but and mitre), use levers (moving picture) and bridges (suspension) and make an electric quiz board.

How to cut, fold, use tabs, strengthen/secure joins and glue.

Produce design ideas/sketches/mood-board based on a design specification/brief. Refine a final design. Make a prototype or model. Review design.

Transferable skills



Evaluate (shared across Artist) **Design** (shared across Digital User and Writer)

Creativity (**make**)



Critical Thinking

- communicating ideas, evaluation, problem-solving



	KS1	LKS2	UKS2
A1	Castles	Charlie and The Chocolate Factory	Victorians
Sp1	Dinosaurs	Pirates	Out of this World
Su1	Seaside	The Tudors	Around the World
A2	Penguins	Egyptians	War and Conflict
Sp2	Wizards	Rainforests	Pompeii
Su2	Minibeasts	Inventors	Australia