Fairlands Curriculum Progression Map

Subject: KS3 Design and Technology

Year 5	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Man Made Wood Chalkboard	Food and Nutrition		Mechanisms Laser Cut Puppet	Design History	Food and Nutrition
Skills	Research, design, saw, file, sand, decorate, join, evaluate (self and peer) improve, using sentences to check work (touch, sight), using a vice			Research, 2D design, CAD lines straight and curved, editing a template, decorate, join, evaluate	Building a timeline, presentation	
Knowledge	Working with manmade wood, tools and machinery, saw and file holds, materials limitations, extending sentences, how to mark a drill hole as an x when making			2D design program, basic mechanisms, motion	Timelines, Iconic designs, design history/ development	
Key Vocabulary/	Cross file, MDF, processed, pillar drill, accuracy, coping saw, Junior hack saw, half round file, PVA glue, Choosing and using hand tools. By Andy Rae			Mechanism, oscillating, reciprocating, rotary, linear	Iconic, timeline, designer	
Stretch and Challenge	Smaller shapes, more shapes, combination of curves and straight edges, independent working			More shapes, more intricate shapes	Greater number of designs researched and placed	
Links to Modern Britain	Individual liberty-Choice of shapes for leaf design and challenge level, choice of colour to decorate, sharing equipment, Mutual respect- Peer evaluation. Rule of law- safety when using tools			Individual liberty-Choice of puppet design and challenge level, Mutual Respect-Sharing equipment	Mutual respect-Sharing laminated iconic designs	
Gatsby links	Carpenter, designer			CAD operator, designer	Designer, architect, engineer, teacher	

Hinterland Knowledge	Discuss design experience and support knowledge gaps		Handouts and YouTube clips to help with use of computers, step by step instructions of computer program	Discussion and video clips to build on historical/product knowledge	

Year 6	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Food and Nutrition	Structures	Design History	Food and Nutrition	Electronics Laser Cut Nightlight	
Skills		Paired work, following instructions constructing a **paper Kite**, testing. **Bridge building**, collaborated designing, teamwork	Picking out key information, presentation		Research, 3D design, prototype, CAD lines straight and curved, mirroring, copy/paste, join, resize, soldering, hot glue gunning, colour mixing, painting, drawing a circuit, ordering a specification for importance, evaluating against a specification	
Knowledge		History of kites, construction of kite, suggesting developments, how to fly a kite, strength of different shapes, types of bridge construction	Design movements throughout history, relating to Y5 iconic design work		Design context, 2D design program, card construction, use of digital camera, developing an idea, safety when soldering and using hot glue gun, what to do if burnt, tools, equipment and electronic components	
Key Vocabulary/reading opportunities		Construction, lift, drag, gravity, tension, torsion, compression, develop, lift, drag, tension	Design movement, identify, event, influence		Circuit, solder, switch, resistor, battery, cell, batter holder, wire cutters/stripers, soldering iron, solder, masking tape, prototype, development, dry join, temporary, permanent, specification	
Stretch and Challenge		Leadership skills, paired and class discussion, questioning, more challenging construction design	Resources with more information and intricate design detail		More shapes, more intricate shapes, more 3D parts, helping others with the processes, independent learning.	

Links to Modern Britain		Mutual respect/ tolerance-Team/ paired work, sharing of ideas	Tolerance-Some design movements shaped by war or historical events, economic and industrial developments		Mutual respect-Working alongside others, Individual liberty-choice of aircraft design and challenge level, Mutual respect-sharing tools and equipment. Rule of law-safety when using tools
Gatsby links		Designer, structural engineer	Designer, architect, engineer		Designer, electrician, CAD operator, product development, quality control
Hinterland Knowledge		YouTube clip of kite flying, support with paper crafting skills, video clips and images of bridges, learning mats with key concept information	Discussion and video clips to build on historical/product knowledge, supported reading skills, vocab lists		Handouts and YouTube clips to help with use of computers, images of aircrafts, step by step instructions of computer program

Year 7	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Wood, metal, plastic- Maze game		Softwood- Toy car		Plastics- Acrylic key fob	
Skills	Marking out and measuring soft wood (jelutong), product analysis, designing with given limitations of materials, cutting using a jig to hold wood, both straight and angled. Sanding soft wood, gluing carefully and accurately, combining materials, using a screwdriver, developing a design to improve, writing suitable specifications, evaluating against a specification using complex sentences		Materials research, product analysis, design 2D and 3D, CAD design (Google sketch up), sawing thicker softwood, file to flatten and add a curve, sand, join, evaluate (self and peer) improve, using sentences to check work (touch, sight), sawing and measuring and marking out 2D and 3D, cutting dowel, joining materials, using a bench hook, writing suitable specifications, evaluating against a specification using complex sentences		Researching and designing for another person's interests, creating appropriate questions and specifications as a class, bending wire, cutting wire, filing using different techniques and sanding plastic using normal sandpaper and wet and dry sandpaper, heating plastic safely, design presentation, evaluating, developing a design with justification	
Knowledge	Researching other types of maze, names and uses of tools and machinery, the making process, how to use the pillar drill safely		Working with softwood, tools and machinery, sawing and file holds, material limitations, sustainability of a forest, sources of hard and soft wood, extending sentences, study of a type of wood of own choice		Working with acrylic/plastic, types of plastic, some uses of plastic, ingredients in plastic, how molecules change when thermoplastic is heated. Which plastics can be recycled, where	

			plastic ends up when not recycled and possible consequences, material limitations
Key Vocabulary/reading opportunities	Jelutong, Jig -straight and angled, accuracy, marking out, process, develop, challenge, accuracy, hand and pillar drill, centre punch, hammer, PVA glue, KS3 Design and Technology Dictionary. By Peter Bull, Working with Timber. By ANON, Woodworking Manual. By Jackson Day, Choosing and using hand tools. By Andy Rae, Why Materials Matter – Seetal Solanki	Cross file, concave, convex curves, processed, accuracy, tenon saw, gentleman's saw, half round file, flat file, round file, PVA glue, mallet, dowel, development, challenge level, ability Sustainability, deforestation, mallet, bench hook, KS3 Design and Technology Dictionary. By Peter Bull, Working with Timber. By ANON, Woodworking Manual. By Jackson Day	Acrylic, thermoplastic, thermosetting plastic, environment, recycle, reuse, repurpose, customer research/profile, cross file, draw file, mirroring (any words or numbers), KS3 Design and Technology Dictionary. By Peter Bull, No More Plastic – Martin Dorey
Stretch and Challenge	Greater number of smaller blocks= more marking out, sawing, sanding and gluing. Frame made with angled joint instead of butted joint	Choice of challenge level, more saw lines and angles= more marking out in 3D, sawing, filing and sanding, more challenging to draw in both 2D and 3D	Design is more intricate and challenging to both draw and make using the wire. Designs are more challenging to draw and outline
Links to Modern Britain	Mutual respect-Working alongside others, sharing tools and equipment, Individual liberty-choice of how challenging maze is to make. Rule of law- safety when using tools	Mutual respect-Working alongside others, challenge level, sharing tools and equipment, Individual liberty-choice of how challenging car is to make. Rule of law- safety when using tools	Working alongside others, choice of key fob design for someone else's interests, sharing tools and equipment. Rule of law- safety when using tools
Gatsby links	Designer, product development, quality control	Designer, CAD operator, product development,	Jewellery designer, product development
Hinterland Knowledge	Research homework to look at what a maze game is. Support and demonstration of using a screwdriver	Discussion and research of types of trees and what grows on them. Images of what shape cars could be, learning mats with key concept information, step by step instructions of computer program	Discussion of interests of people outside own age, modelling and discussion to understand what questions to ask or who to ask. Video clips ad discussion about pollution problems, learning mats with key concept information

Year 8	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	3D printed castle game piece & castle game		Cardboard modelling/prototyping to scale, chair design	Hardwood- Drink coaster	Mechanisms- Sweet dispenser	
Skills	Designing in 2D and 3D, final design, TinkerCAD comp x2, evaluate, 2 Point perspective drawing. Game- Group work, specifications decided under key headings, design/ make in groups (3/4), peer evaluate, recycled materials, Castle themed. Construction, test and evaluate		Product analysis, rendering, designs in 2D & 3D, cardboard modelling, scaling down, ergonomics, use of template, designing for a client	Designing for a brief, abstract, paper 2D design development, decorative hole X4, working with hardwood, Choice of saw, file, belt sand, sand, inside cut out shapes, wood burning detail, evaluate.	Research, target market, understanding specification, evaluating, analysing, drawing in 3d, rendering, creativity, Isometric drawing, rendering a design, using a specification, measuring and marking, using a Tenon saw, marking	

				out using a marking gauge, adhesives, Using 2D Techsoft CAD-CAM etching, sawing, drilling, painting, use of template, measuring, accuracy, evaluating
Knowledge	Class discussion of experience of board games, TinkerCAD tutorial, castle research homework, castle mood board to refer to	Chair analysis research homework, user needs, cardboard modelling techniques	Tools knowledge, Diary of making, how to take out and replace a coping saw blade, types of hardwood, material limitations	Analysis of 3 different sweet dispenser mechanisms, tools knowledge, research the advantages and disadvantages of different finishes on woods
Key Vocabulary/reading opportunities	Aesthetics, Customer, Cost, Environment, Safety, Size, dimensions, function, materials, • Building with Second hand stuff; How to reclaim, revamp, repurpose, and reuse salvaged and leftover building materials. By Chris Peterson, • Change by Design – Tim Brown	Scaling, design, development, product analysis, ergonomics, creative, dimensions, client, features, prototype, develop, ergonome, evaluate, anthropometrics	Design, coping saw, junior hack saw, product analysis, production, pillar drill, belt sander, materials, appearance, specification, hardwood, abstract shape, KS3 Design and Technology Dictionary. By Peter Bull, Working with Timber. By ANON, Woodworking Manual. By Jackson Day	Mechanism, wood finishes, render, analysis, isometric, target market, wood joints (butt, comb, dowel, lap joint), specification, marking gauge, adhesive, KS3 Design and Technology Dictionary. By Peter Bull
Stretch and Challenge	Castles can be as intricate as the pupil chooses and the time allows (3 extra lunchtimes given) Games can be 3D and have many aspects chosen by the group, more castles and games analysed/researched, castles more challenging to draw in 2D, 3D and 2 point perspective	More intricate shape for chair and greater number of pieces to make 3D prototype, more chairs analysed, more challenging to draw in 2D or 3D	Smaller shapes, more shapes, combination of curves and straight edges, independent working, more challenging to draw	More knowledge of different mechanisms, more research into wood finishes, more intricate laser etched design, independent learning, more challenging to draw, 2D and isometric
Links to Modern Britain	Individual liberty-Choice in style of castle and type of castle game. Mutual respect- Group work, sharing of ideas.	Individual liberty- Choice of chair shape/style, Mutual respect- sharing equipment with table	Mutual respect- Sharing tools and equipment with class, Individual liberty- choice of abstract shape, Rule of law- safety when using tools	Individual liberty- Choice of etched design, choice of finish, Mutual respect- sharing tools and equipment, Rule of law- safety when using tools
Gatsby links	CAD operator, game designer, team leader	Furniture designer, quality control, interior decorator	Designer, product development, quality control	Designer, CAD operator, product development,

Hinterland Knowledge	Discussion of experience of playing board games. Images of castles to refer to, step by step instructions of computer program	Images of types of chair throughout history	Images of objects made form real wood, research homework	Images of objects made form real wood, research homework