

KS3 DT and Construction curriculum :In order to fully appreciate Design, Technology and Construction and develop deep schema, topics of knowledge have been intelligently sequenced by the following rationale:

- That our curriculum is rich and complex in its depth of powerful knowledge. This depth is made up of much substantive and disciplinary knowledge supported and nuanced by many interleaving strands of hinterland knowledge. Furthermore we see how these strands of hinterland knowledge weave through other subjects. It is our ambition that all students experience the ‘revelation’ of these incredible links as they join up their learning.
- With this rich complexity in mind we have clearly identified key pillars of knowledge that form the foundations underpinning our curriculum, and support the main experiential areas of learning within design, technology and construction.

Pillars of knowledge					
User	Purpose	Functionality	Design Decisions	Innovation	Authenticity
Design for others	Design to meet criteria as set out in a design specification. Communicate design requirements and evaluate success.	Design and make products that function effectively in order to fulfil users’ needs, wants and purposes.	Make design decisions based on creative, technical and practical expertise. Consider alternative ideas that avoid design fixation, stereotypes, and lead to innovation.	Original thinking and creative problem solving. Demonstrate a range of ideas in response to an open ended starting point. Evaluate innovation through critique.	Design and make products that are believable, real and meaningful. Understand the difference between genuine products and works of art/design.

Experiential areas of study:			
Design	Make	Evaluate	Technical knowledge
The iterative design process, design strategies and graphical communication techniques. Research and investigation. Solving design problems.	Select and use tools, equipment and material.	Investigate and critique the work of others. Understand the impact of new and emerging technologies on society. Consider how to design responsibly. Test, evaluate and refine design ideas taking into consideration the views of others.	Technical skills and processes using tools, equipment. Identify materials and their properties. Understand forces and stresses. Understand how mechanical and electrical systems work.

	Year 7	Year 8	Year 9
No.	Design		
1	Research/investigation: signs, symbols and logos	Research/investigation: product safety and consumer rights	Research/investigation: biomimicry
2	Research/investigation: client/user needs	Research/investigation: client/user needs	Research/investigation: ergonomics
3	Introduction to the design brief and specification	Analysing a design context, writing a design brief	Analysing a design context, writing a design specification
4	Technical communication techniques: iterative designing and rendering	Technical communication techniques: iterative design and user centred design	Technical communication techniques: Iterative design and biomimicry
5	Technical communication techniques: 1 and 2 point perspective drawing	Technical communication techniques: Isometric projection	Technical communication techniques: orthographic projection
6	CAD/CAM: introduction to 2D Design software and CAMM1 - NETS	CAD/CAM: 2D Design software and CAMM1 - NETS	CAD/CAM: introduction to 3D computer modelling
	Make		
1	Measuring/marketing out in mm, using a steel rule and try square	Using a marking gauge, scribe and centre punch	Using production aids
2	Using a cutting knife, safety ruler and cutting matt	Modelling in card	Modelling in card
3	Using the pillar drill and belt sander	Using the strip heater and metal bending machine	Using steam bending and vacuum former
4	Using hand tools	Using hand tools	Using hand tools
5	Metal casting	Bending and shaping metal	Bending and forming polymers
6	Soldering electrical components	Glueing and clamping	Cutting a screw thread

	Evaluate		
1	Health and safety: moral and legal obligations	Consumer rights and design responsibility	Ethical design and fair trade
2	The role and importance of graphic communication (symbols)	Packaging symbols and environmental impact	Embodied energy and carbon footprint
3	Branding and enterprise	The 6 R's	Life Cycle Assessment
4	How to analyse a product and critique work	Evaluating a product: client feedback and critique	Evaluating a product: client feedback and critique
5	The work of others: Harry Beck and Margaret Calvert	The work of others: Memphis and Ettore Sottsass	The work of others: Gerrit Reitveld and
6	New and emerging technologies: The electronics industry	New and emerging technologies: Scales of production	New and emerging technologies: Technology push vs market pull
	Technical Knowledge		
1	Units of measurement and conversion, component values	Calculating area and volume	Dimensions and tolerance
2	Classifying materials: timber - softwoods	Classifying materials: timber - hardwoods	Classifying materials: timber - manufactured boards
3	Classifying materials: paper and boards	Classifying materials: polymers - thermoplastics	Classifying materials: polymers - thermosetting plastics
4	Classifying materials: metals - ferrous, non ferrous and alloys	Classifying materials: smart materials	Classifying materials: composites
5	Identifying electrical components	Identifying mechanical systems and components	Identifying mechanical systems and components
6	Identifying the properties and working characteristics of materials	Identifying the properties and working characteristics of materials	Identifying forces and stresses

Practical outcomes

Year 7	Year 8	Year 9
Wood joint: dowel joint	Wood joint: Mitre or T halving	Wood joint: Finger Joint
Bottle opener / brass key ring	Phone stand key fob	Coat hook
Structure: card net box	Structure: card net pyramid	Structure: truss frame
Pop up card mechanism	Kinetic card sculpture	Lego mechanisms
Card holder	Desk tidy	Concrete/copper light
Pewter logo pendant/key fob	Jewellery / brooch design	Ring box
Electronic LED badge	Temperature sensor card	Free standing business card