

KS3 CURRICULUM MAPPING: Huntington School Design and Technology

The Design Technology department at Huntington School is committed to delivering an exciting and innovative curriculum that is accessible to all students and provides opportunities for learners to become self-confident and imaginative problem solvers who can thrive in an ever-evolving technological society. With creativity at its core, lessons will provide the opportunity to access new technologies and develop traditional skills so that learners can create high quality outcomes that consider important social, ethical, and environmental responsibilities. Evidence based teaching strategies and a safe and supportive environment will foster the independence to experiment without fear of making mistakes and develop the resilience and awareness to become the designers, makers, and consumers of tomorrow.

NATIONAL CURRICULUM	YEAR 7			YEAR 8			YEAR 9		
	1	2	3	1	2	3	1	2	3
NC Attainment Targets - Subject Content									
Design	Design Skills	H+S Door Hanger	Torch	Mechanisms/Structures	Trinket box	Lighting	Clock	Ergo Modelling	Stationery storage
use research and exploration, such as the study of different cultures, to identify and understand user needs			Research into basic electronics and smart materials and their applications.	Research into structures from around the world. Research of mechanisms contained in everyday objects	Research skills into existing products, material types and dimensioning of contents.		Research into a set context to identify a starting theme for the clock design.	Research into the work of Dyson and their extensive use of prototyping. Identifying user needs based on ergonomic requirements	
identify and solve their own design problems and understand how to reformulate problems given to them	Formal drawing techniques will be taught to allow student to reapply these skills into different scenarios			Designing simple mechanisms to convert movement.	Identify their own storage needs to personalise the project and reformulate the problem		Design problem and brief generated from an original context to simulate GCSE format	Resolve the problem of redesigning a product to be more ergonomic.	Open brief provided. Produce a storage solution using a range of demonstrated techniques
develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations					Create an ACCESSFM specification to personalise the project.		Design specification required for the clock design based on ACCESSFM		Own specification developed based on a stationery storage open brief
use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses				Researching structures from nature to understand strong shapes e.g. honeycomb	Client profiling to create a user centred item	Biomimicry investigated as a creative source for design ideas.	User centred design linked to client is used e.g. teenage lifestyle context	User centred design to calculate anthropometric data.	Bespoke design outcomes based on personal requirements and specifications
develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools	Freehand, 2D and 3D drawing techniques. Perspective and isometric drawing. Introduction to 2D Design program.	Layered planning to show intentions of design with marking out and measurements considered.	Orthographic and sectional views. Electronic circuit diagrams		Plan drawing and isometric 3D design	Range of design sketches developed using biomimicry themes overlays. Card modelling used to test design concepts	Sketching skills developed using mixed media. Formal drawing techniques for constructional drawings.	Sketching skills developed into 3D modelling.	Development of 2D Design skills and sketch Up 3D modelling
Make	Design Skills	H+S Door Hanger	Torch	Mechanisms/Structures	Pencil Case	Lighting	Clock	Ergo Modelling	Stationery storage
select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture		Health and safety of key workshop machinery and tools. Skills developed in wood/metal/plastic.	Polymer tube construction. Basic electronic using PCB and soldering.	Modelling techniques used to create working examples of different mechanisms	CAM laser cut options for the lid. Alternative use of pyrography for decoration	Vacuum forming casing used to explain properties of thermoplastics.	Mixed material skills developed in a range of resistant materials including CAD CAM	Specialist modelling skills required in a variety of wasting processes e.g surform tools	CAM laser cut solution required within the design.
select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties		Material finishing techniques.	Smart materials investigated. Phosphorescent pigments. Electronic component functions		Variety of manufactured and natural timbers used within construction based on their relevant properties.	More complex range of components and soldering techniques developed.	Polymer heat processes such as line bending introduced	Material property knowledge developed in finishing techniques on foam based materials	Acrylic bending and shaping using thermosetting properties
Evaluate	Design Skills	H+S Door Hanger	Torch	Mechanisms/Structures	Pencil Case	Lighting	Clock	Ergo Modelling	Stationery storage
analyse the work of past and present professionals and others to develop and broaden their understanding								Analysis of James Dyson and develop understanding of the Dyson brand	
investigate new and emerging technologies				How traditional mechanisms compare to those similar used in modern technology e.g. engineering				Investigation of new technologies developed by Dyson through iterative design strategies	Consideration of smart material input to designs e.g. polymorph

test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups		Final product evaluated to support future improvement of practical skills			Product evaluated against original specification and the requirements of the client.		Evaluation of the final product against context and original specifications	Modelling tested ergonomically throughout the process with intended user.	Use of an iterative approach to testing and evaluating against specifications.
understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists			How electrical products often have an intentional limited lifespan (planned obsolescence). The impact of battery disposal on the environment	How mechanisms have supported human development and society.	Timber based project supports the understanding of sustainable sourcing and the impact of deforestation.	Lamp shade will incorporate some elements of upcycling from plastic packaging		Understanding of how products are developing to suit the demands of the consumer	
Technical Knowledge	Design Skills	H+S Door Hanger	Torch	Mechanisms/Structures	Pencil Case	Lighting	Clock	Ergo Modelling	Stationery storage
understand and use the properties of materials and the performance of structural elements to achieve functioning solutions		Understanding the differences between varying material working properties.	Property of conductivity specified in relation to PCB, wiring and solder.	Investigate the relationship between material properties and forces in successful mechanisms and structures. How materials can be stiffened and strengthened	Comparison of timber and manufactured board properties compared	Understanding the properties and functions of a wide variety of common electrical components.	Begin to use awareness of material properties from previous projects and use them effectively in various component parts.	Understanding gained of modelling materials with a focus on the working properties of styrofoam	Experimentation into material properties throughout the process.
understand how more advanced mechanical systems used in their products enable changes in movement and force				Wide variety of mechanical systems and processes investigated to help understand forces, movement, and transfer.	Reference to motion and mechanisms in the pivot lid solution.		Links made back to mechanisms and movement in the functioning of a clock mechanism e.g. rotation.		
understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]			Introduction to electronics. Input, process, output. Battery input, PCB, LED output			Light dependent resistors used to act as a sensor for activation.			
apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].									STEM day. Use of programmable microcontrollers to operate remote vehicles

Assessment and Feedback	<ul style="list-style-type: none"> With the nature of the subject being predominantly practical, verbal feedback will form a significant part of this department's feedback policy. Verbal feedback will be conducted in all lessons when supporting the progress of practical work. Detailed feedback will be given at the end of each practical project and will consist of progress and effort grading's in line with whole school data entries. 'Strengths' and 'areas for improvement' will be clearly identified in all formative assessment. SPG will be checked and corrected with a focus on specialist subject vocabulary. Students will undertake peer and self-assessment at appropriate times. They will be guided through this process using assessment criteria guidelines. Maintenance marking will be undertaken throughout the projects. Tasks will be allocated a HIGH/MEDIUM/LOW grade at various interval based on a specific set of assessment criteria. In the event of whole class remote learning requirements, feedback will be provided through TEAMS.
Extended Learning	<ul style="list-style-type: none"> Extended learning tasks will be set as and when appropriate related to the learning objectives of each lesson: Consolidation of learning by applying knowledge and using skills to answer set tasks e.g. evaluation of practical activities Product analysis e.g. a product or range of products to improve their function. Research in preparation for future tasks e.g. finding appropriate research material or inspiration for designing. To practice and develop skills e.g. annotation of design tasks, drawing tasks. Learning and revision for class tests and examinations. Improvement and use of DIRT time to improve or develop set tasks. Learning the spelling and key subject terminology of a range of different tools, equipment and workshop resources (materials). Pre-planning and evaluating the stages of making a range of different practical projects. EL may be set online as appropriate based on the content covered during lessons. This can be completed and submitted online.
How can I help my child?	<ul style="list-style-type: none"> Take the time to look at everyday objects and consider their materials, manufacture and function. Could they be improved? Watch DT related videos e.g. 'How it's made' and 'Inside the factory' series on Youtube are very informative. Consider the environmental impact of the products you use at home. Encourage children to play an active role in recycling and identifying materials. Disassemble and make products if the facilities are available. Any creative making skills are beneficial e.g. Lego, Fimo clay, craft skills. Encourage ICT skills in design and modelling e.g. Google Sketch Up. Act as client for projects and help provide feedback on the work produced.