Twyford Trust DT Coverage

Intent: The Twyford Trust has constructed its curriculum in order to achieve maximum access to academic and career pathways. It has consciously moved away from a focus on manufacturing processes and towards 'design thinking' and use of digital technology. Its lead school in this curriculum planning is Ada Lovelace where the Trust's industry partner, IBM has influenced an innovative approach of project based learning promoting problem solving approaches which are at a premium for entrants to the workforce. The academic content of the Design Technology KS3 curriculum is currently taught across 4 subject areas (Maths / Science / Computing and Art) in order to recognise the specialist subject expertise required in changing subject area. Curriculum mapping has been undertaken to ensure that all students at KS3 have the technical knowledge and digital / creative skills required for the design process (Design/Make/Evaluate). Additional specialist workshops have been created to introduce students to the use of Design software for CAD/CAM (such as Tinkercad) and Cookery / Catering

The Trust will continue to keep the DT curriculum under review in the light of up-coming syllabus reviews at KS4

KS3 Implementation

Technical Knowledge Curriculum Coverage:

National Curriculum Technical Knowledge	**Topic Coverage (KS3)**
Mechanics & Forces : understand how more advanced mechanical systems used in their products enable changes in movement and force	**Science** : **Year 10:** Forces - Car safety linked to energy, braking, momentum. **(term 1**
Electronics : understand how more advanced electrical and electronic systems can be powered and used in their products	**Science** Electricity and magnetism - Use of magnets to control circuits (year 8 term2) Electricity (term 2 Year 10)
Nutrition : understand and apply the principles of nutrition in health	**Science** : Y7 Organs and health

Application of the Design Process:

Design / Make / Evaluate	**Topic Coverage**
Art & Design	Art & Design :
DT Workshop 1 : Computer Aided Design : Introduction to Tinker cad	Tinkercad – Design Principles
DT Workshop 2 : the CAD/CAM Challenge	Design and Make : Intro to 3-D printing
Food Workshop 1	Proteins & Vitamins
Food Workshop 2	Carbohydrates

Curriculum Progression from KS3 - HE

Students wishing to develop their application of the design process at KS4 may do so in either Computing, Music Technology or Graphics. These subjects have been selected in order to give students maximum flexibility to progress onto the widest range of creative design courses.

Students who are also encouraged to take course packages such as Maths & Graphics + 1 or Maths & Computing + 1 if they wish to progress to Design courses at post 16 or post-A-levels

Students wishing to progress to engineering courses at university are also guided towards Maths (often with Physics or Chemistry) + 1 or to take a BTEC engineering as a full course at college post-16. Engineering-soc exists in the sixth form enrichment activity for students who seek to test their appetite for Mechanical / Chemical or Civil engineering at HE.

This differentiated curriculum strategy has been very successful in supporting students to a wide range of Design Technology routes.

The following chart summarises the progression routes within DT which have been mapped in order to ensure students within Trust schools are well positioned to access courses within the range of specialist options relating to Design Technology at KS4 / 5 / Post-18

KS4 Options	**Onward progression routes (Post-16)**	**Onward progression routes (Post-16)**
Art & Design (Twyford Trust)) Graphics (Twyford Trust) Computing (Twyford Trust) Music Technology Level 1 / 2 Engineering Design (Westminster UTC)	T-Level : Digital Production, Design and Development (Ada Lovelace) Graphics / Music Tech A-levels L2 or L3 BTEC engineering (Ealing Hammersmith and Westminster College Maths /Further Maths / Physics/ Computing	Software design / Applied Digital technology courses at FE / HE Industry Sponsored apprenticeships Creative Industry options at FE/HE Degree Level Engineering / Product Design Degree level Engineering courses (Russel Group)

KS3 DfE Curriculum

Colour code for which subject the coverage relates to – ART, SCIENCE, MATHS, COMPUTER SCIENCE, D&T project

Art & Design Technology	Year 7				Year 8			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Use a range of techniques to record their observations in sketchbooks, journals and other media as a basis for exploring their ideas	Natural forms observational tonal drawing **Karl Blossfeldt**	Artist research **Andy Goldsworthy** research Intro to Collage Pastel Watercolour Tone	Portraits / Collage /Painting **Federico Babina** Artist research **Picasso** Weeping Women Cubism Photomontage	Drawing/ Oil pastel/ Proportions **Sarah Graham Derek Stroup**	Still life linked to History and symbolism	Crazy Creatures Linked to Flammables	Roy Lichtenstein	Pop Art linked to school production
Use a range of techniques and media, including painting	Introduction to formal elements focus on Tone	Formal Elements continue with a focus on Collage, Pastels, watercolour and Tone	Facial features taught Watercolour focus and refined	Oil pastels and colour pencil		Independent design Sewing		Block colour Typography
Increase their proficiency in the handling of different materials	A mixed media leaf is created using paint, tone, collage and oil pastel	Students create instillation art using photography to document this	Photomontage	Collage with sweet wrappers	Heating and cooling – materials that are thermal conductor /insulator		Paint Pen Electricity – materials that are electrical conductors /insulators	
Analyse and evaluate their own work, and that of others, in order to strengthen the visual impact or applications of their work	visual examples of levels for students to visually see the standards and guidance WWW and EBI at the end of every lesson	visual examples of levels for students to visually see the standards and guidance WWW and EBI at the end of every lesson	visual examples of levels for students to visually see the standards and guidance WWW and EBI at the end of every lesson	visual examples of levels for students to visually see the standards and guidance	visual examples of levels for students to visually see the standards and guidance	visual examples of levels for students to visually see the standards and guidance	visual examples of levels for students to visually see the standards and guidance	visual examples of levels for students to visually see the standards and guidance

Art & Design Technology	Year 7				Year 8			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Introduction to science – equipment drawing			WWW and EBI at the end of every lesson	WWW and EBI at the end of every lesson	WWW and EBI at the end of every lesson	WWW and EBI at the end of every lesson Electricity – circuit diagrams	WWW and EBI at the end of every lesson
Design - use research and exploration, such as the study of different cultures, to identify and understand user needs	Artist research completed Students reflect on what they have learnt from the artist and apply this to own work. They select from a range of artists	Artist research completed Students reflect on what they have learnt from the artist and apply this to own work. They select from a range of artists	Artist research completed Students reflect on what they have learnt from the artist and apply this to own work. They select from a range of artists	Artist research completed Students reflect on what they have learnt from the artist and apply this to own work.	Artist research completed Students reflect on what they have learnt from the artist and apply this to own work.	Artist research completed Students reflect on what they have learnt from the artist and apply this to own work. Chemical reactions – linking reactivity to contexts e.g. acid rain.	Artist research completed Students reflect on what they have learnt from the artist and apply this to own work.	Artist research completed Students reflect on what they have learnt from the artist and apply this to own work.
Design - identify and solve their own design problems and understand how to reformulate problems given to them	Introduction to science – methods Problem solving taught throughout	TinkerCAD project Problem solving taught throughout	Problem solving taught throughout	Problem solving taught throughout	Problem solving taught throughout	Design unique personal felt creatures Problem solving taught throughout	Electricity – fault finding in circuits Problem solving taught throughout	Problem solving taught throughout
Design - develop specifications to inform the design of innovative, functional, appealing		TinkerCAD project					Chemical reactions –	

Art & Design Technology	Year 7				Year 8			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
products that respond to needs in a variety of situations							electrolysis /electroplating	
Design - use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses		TinkerCAD project						
Design - develop & communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools	Introduction to science – equipment set up drawings Digital Literacy – using spreadsheets to model and predict Digital Literacy Using charts to analyse data	Organs and health – microscope drawings TinkerCAD project				3D drawing, plans and elevations	Electricity – circuit diagrams	
Make - select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture	Every practical	Every practical TinkerCAD project	Every practical	Every practical Measuring / drawing angles and constructing triangles	Every practical	Every practical	Every practical	Every practical
Make - select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties								
Evaluate - analyse the work of past and present professionals and others to develop and broaden their understanding	Artist One research completed Students reflect on what they have learnt from the artist and	Artist research completed Students reflect on what they have learnt from the	Artist Two research completed Students reflect on what they	Artist research completed Students reflect on what they	Artist Three research completed Students reflect on	Artist research completed Students reflect on what they	Artist Four research completed Students reflect on what they	Artist research completed Students reflect on what they

Art & Design Technology	Year 7				Year 8			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	apply this to own work.	artist and apply this to own work. TinkerCAD project	have learnt from the artist and apply this to own work.	have learnt from the artist and apply this to own work.	what they have learnt from the artist and apply this to own work.	have learnt from the artist and apply this to own work. Periodic table – generation of modern periodic table	have learnt from the artist and apply this to own work.	have learnt from the artist and apply this to own work.
Evaluate - investigate new and emerging technologies		TinkerCAD project using a scientific calculator						
Evaluate - test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups		TinkerCAD project Designing software for to meet a requirement						
Evaluate - understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists		TinkerCAD project						
Technical knowledge - understand and use the properties of materials and the performance of structural elements to achieve functioning solutions	Matter – changing of state	Fuels – energy releasing		Acid and bases – use of acids and bases	Heating and cooling – thermal conductivity		Electricity – electrical conductivity	
Technical knowledge - understand how more advanced mechanical systems used in their products enable changes in movement and force						Forces – moments Rates of change	Angle facts	

Art & Design Technology	Year 7				Year 8			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Technical knowledge - 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]							Electricity	
Technical knowledge - 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].			Microbit programming which includes using microbits to create a range of computational programs				Microbit programming building on the year 7 unit to include accelerometers on the micro-computer	