Design and Technology
Key Stage 3

Purpose of study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Aims

The national curriculum for design and technology aims to ensure that all pupils:
- ♣ develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- ♣ build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- ♣ critique, evaluate and test their ideas and products and the work of others
- ♣ Schools are not required by law to teach the example content in [square brackets].

Henlow Academy set up
- ♣ Year 7 and Year 8 follow approximately a nine-week rotation throughout the academic year. This includes DT, Food and Art.
- ♣ Year 9 choose their options and are taught throughout the year to gain further depth into this subject.
- ♣ Optional topics to enrich and enthuse the students' enjoyment of DT. This year this includes Bug hotel and Jewellery projects.

DT Areas	Intent	Implementation				
		Year 7 **Pencil box**	**Year 8** **Abstract Clocks**	**Year 9 (Term 1)** **Mood light**	**Year 9 (Term 2)** **Pewter project**	**Year 9 (Term 3)** **Pop up card**
Design	Use research and exploration, such as the study of different cultures, to identify and understand user needs	♣ Mind map ♣ Research personal themes to link to the client	♣ Mind map ♣ Design movements/ Architecture ♣ Calatrava ♣ Zaha Hadid ♣ Memphis	♣ Mind map ♣ User centred design ♣ Mood board	♣ Mind map ♣ Nature ♣ Aztec ♣ Art Deco ♣ Client profile	♣ Mind map ♣ Client profile ♣ Chosen theme
	Identify and solve their own design problems and	♣ Brief ♣ Specification ♣ ACCESS FM	♣ Brief ♣ Specification ♣ ACCESS FM	♣ Brief given ♣ Analysis ♣ Specification	♣ Brief given ♣ Analysis ♣ Specification	♣ Brief given ♣ Analysis ♣ Specification

	understand how to reformulate problems given to them	♣ Teacher led ♣ Understanding main areas ♣ Initial designs for pencil box	♣ Teacher semi led ♣ Recalling the main areas ♣ Using images for creativity of initial designs	♣ ACCESS FM ♣ Independent from student ♣ Independent application of the main areas and more specialise keywords. ♣ Creativity skills recalled.	♣ ACCESS FM ♣ Independent from student ♣ Independent application of the main areas and more specialise keywords. ♣ Scrutffi and Jack Straws technique	♣ ACCESS FM ♣ Independent from student ♣ Independent application of the main areas and more specialise keywords. ♣ Creativity skills selected
	Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations	♣ Development of initial ideas remembering and linking to the needs of the client	♣ Development of initial ideas remembering and linking to the needs of the client	♣ Development of initial ideas remembering and linking to the needs of the client ♣ Link to specification	♣ Development of initial ideas remembering and linking to the needs of the client ♣ Client feedback	♣ Development of initial ideas remembering and linking to the needs of the client ♣ Link to specification
	Use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses	♣ Free hand sketching	♣ Free hand sketching in 3D	♣ User centred design ♣ Free hand sketching in 3D	♣ Scrutffi and Jack Straws technique ♣ Biomimicry	♣ Graphical skills
	Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools	♣ Isometric ♣ Oblique revisited ♣ Thick and thin lines ♣ Render from a light source ♣ Annotation	♣ Build up from Year 7 skills ♣ One-point perspective ♣ Two-point perspective ♣ Card modelling ♣ Construction information	♣ Build up from Year 7 & 8 ♣ 3rd angle orthographic ♣ CAD for design	♣ Build up from Year 7 & 8 ♣ 3rd angle orthographic ♣ Card modelling ♣ CAD for mould	♣ Build up from Year 7 & 8 ♣ Exploded drawings ♣ Card modelling

Impact Design		♣ Students will have undergone the research and design process to have a final design for their pencil box	♣ Students will have undergone the research and design process to have a final design for their abstract clock design	♣ Students will have undergone the research and design process to have a final design for their mood light design	♣ Students will have undergone the research and design process to have a final design for their pewter project	♣ Students will have undergone the research and design process to have a final design for their pop up card project
Make	Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture	♣ Try square ♣ Marking gauge ♣ Chisel ♣ Mallet ♣ Bench hook ♣ Rule ♣ File ♣ Tenon saw ♣ CAD – Laser cutter ♣ Consumables	♣ Try square ♣ Marking gauge ♣ Chisel ♣ Mallet ♣ Bench hook ♣ Rule ♣ File ♣ Tenon saw ♣ Coping saw ♣ Bradawl ♣ CAD – Laser cutter ♣ Consumables	♣ Try square ♣ Marking gauge ♣ Chisel ♣ Mallet ♣ Bench hook ♣ Rule ♣ File ♣ Tenon saw ♣ Coping saw ♣ Bradawl ♣ Embossing stamps ♣ Counter sink ♣ Screwdriver screws ♣ Consumables	♣ Try square ♣ Marking gauge ♣ Bench hook ♣ Rule ♣ Needle File ♣ Tenon saw ♣ Coping saw ♣ Bradawl ♣ Consumables	♣ Card ♣ Tracing paper ♣ Coloured paper ♣ Power point ♣ Consumables
	Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties	♣ Pine ♣ MDF ♣ Lid selection (MDF/Acrylic) ♣ Other	♣ Pine ♣ Dowels ♣ MDF ♣ Acrylic ♣ Bass rod (Optional) ♣ Other ♣ Dependent on student design	♣ Pine ♣ Electronic ♣ Acrylic ♣ Brass (optional) ♣ Other	♣ Pewter ♣ MDF ♣ Acrylic ♣ Bass rod ♣ HIPs ♣ Card ♣ Other	♣ Papers & Boards ♣ Marker Pens ♣ Other ♣ Acrylic ♣ HIPS (optional)

	Risk assessment/ Machines Tools and equipment	♣ Bandfacer ♣ Pillar drill (optional) ♣ Bobbin (optional) ♣ Laser machine	♣ Bandfacer ♣ Mortise machine ♣ Bobbin sander ♣ Hegner ♣ Pillar drill	♣ Bandfacer ♣ Mortise machine ♣ Laser ♣ Soldering circuits ♣ Pillar drill	♣ Bandfacer ♣ Mortise machine ♣ Bobbin sander ♣ Hegner ♣ Vacuum forming	♣ Craft knives ♣ Line bending
Impact Make		♣ Manufacture plan ♣ Pencil box designed and made for client.	♣ Manufacture plan ♣ Abstract clock designed and made for client.	♣ Manufacture plan ♣ Mood light designed and made for client.	♣ Manufacture plan ♣ Scales of production ♣ Pewter piece (decided and designed by the student with packaging) designed and made for client.	♣ Manufacture plan ♣ Pop up card and envelope designed and made for client.
Evaluate	Analyse the work of past and present professionals and others to develop and broaden their understanding	♣ Product analysis	♣ Product analysis ♣ Case studies	♣ Product analysis	♣ Product analysis ♣ Case studies	♣ Product analysis
	Investigate new and emerging technologies	♣ CAD/CAM		♣ CAD/CAM	♣ CAD/CAM	♣ Printing processes
	Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups	♣ Guided questions ♣ Personal evaluation ♣ Peer feedback ♣ Evaluate against the specification	♣ Guided questions ♣ Personal evaluation ♣ Evaluate against the specification ♣ Peer evaluation	♣ Independent questions ♣ Personal evaluation ♣ Evaluate against the specification ♣ Peer evaluation ♣ Modifications/ Comparisons	♣ Independent questions ♣ Personal evaluation ♣ Evaluate against the specification ♣ Peer evaluation ♣ Modifications/ Comparisons	♣ Independent questions ♣ Personal evaluation ♣ Evaluate against the specification ♣ Peer evaluation ♣ Modifications/ Comparisons
	Understand developments in	♣ Introduction to the	♣ Identifying the following	♣ Ability to streamline	♣ Ability to streamline	♣ Ability to streamline

	design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists	following: Scales of production ♣ Sustainability ♣ 6Rs	by giving examples: Scales of production ♣ Sustainability ♣ 6Rs	processes in terms of the following: ♣ Scales of production ♣ Sustainability ♣ 6Rs ♣ Tessellation ♣ Planning ♣ FSC	processes in terms of the following: ♣ Scales of production ♣ Sustainability ♣ 6Rs ♣ Tessellation ♣ Planning	processes in terms of the following: ♣ Scales of production ♣ Sustainability ♣ 6Rs ♣ Tessellation ♣ Planning
Impact Evaluate		Understanding evaluations skills	Understanding how to evaluate critically	Understanding how to self-evaluate throughout the project and from client feedback	Understanding how to evaluate to a specification and throughout the project	Understanding how to self-evaluate throughout the project and from client feedback
Technical Knowledge	Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions	♣ properties of materials, etc hardwood, softwood, manufactured boards	♣ properties of specific woods	♣ properties of specific woods, plastics and material selection for projects	♣ properties of specific metals, smart materials and material selection for projects	♣ properties of specific papers and boards and material selection for projects
	Understand how more advanced mechanical systems used in their products enable changes in movement and force	♣ Types of movement	♣ Levers and linkages		♣ cams and followers	♣ Types of folds /mechanisms in card
	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]			♣ Circuits and theory		

	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].			♣ Circuits and theory		
Impact Technical Knowledge		♣ Understanding the application to certain products and decision making.	♣ Understanding the application to certain products and decision making.	♣ Understanding the application to certain products and decision making. ♣ Soldering a circuit and knowledge about components	♣ Understanding the application to certain products and decision making.	♣ Understanding the application to certain products and decision making.