

Design & Technology Curriculum Aims



Intent of KS3 Curriculum:

Design and Technology is a perfect example of head and hands working together. For pupils, having to think about specific purposes and users for their products is much more demanding than simply following instructions to make something. Pupils have to think, decide and plan, as well as go and create.

Through studying Design and Technology through a wide variety of activities and processes, pupils use of a broad range of knowledge, skills and understanding which helps prompt engagement and nurtures creativity and innovation. They design and make functional products that solve real and relevant problems through a range of contexts via an array of different materials. It encourages pupil's to think about important issues and explore the designed and made world in which we all live and work.

Some of the benefits of studying Design and Technology

1. How to be creative
2. How to solve real problems
3. Learn skills that to can be used in a future job
4. Learn about materials, processes and tools
5. Learn about the effect of products on the environment & people
6. Make and manipulate things with different materials
7. Learn practical skills that can help yourself
8. Apply knowledge from other subjects
9. Make a finished product to take home and be proud of

Through the curriculum pupils go through the design process in order to acquire and apply knowledge and understanding of materials and components, design skills, existing products, practical skills, quality and health and safety.

The skills learned in D&T also help with learning across the curriculum. Knowledge about the properties of materials helps in science and the practice of measuring accurately helps in maths. These skills help in IT through the pupils use of computers and naturally, in art and design.

Design and Technology provides opportunities for pupils to develop their capability. By combining their design and making skills with knowledge and understanding they learn to create quality products.

D&T brings learning to life. It is a motivating context for discovering literacy, mathematics, science, art, PSHE and ICT.

Pupils are exposed to the design process to develop their practical, designing and creative ability to solve real and relevant problems within a variety of contexts.

This is achieved through three Design & Technology subject areas:

- **Resistant Materials/Product Design**
- **Textiles**
- **Graphics**

Through evaluation of past and present Design and Technology, pupils will develop a critical understanding of its impact on daily life and the wider world around them.

Implementation of Skills & Concepts:

Students enter KS3 with a mixed variety of existing skills due to the differing amount of exposure in KS2. Within the first lessons students are taught the key health and safety expectations whilst in the design and technology department. Health and safety is paramount and students are consistently reminded of the expectations whilst in the subject area. Students have to sign a health and safety contact at the start of each new rotation cycle in order for them to carry out practical work in that subject area.

Skills are delivered through the following subjects on a rotation of 8 week blocks:

- **Resistant Materials/Product Design**
- **Textiles**
- **Graphics**

Impact

The Design and Technology Department will assess the impact of key concepts, skills and content throughout the year via regular assessments, marking and student feedback, book scrutiny and learning walks. This will be evident through the department QA folder and department tracking document (found within the department shared drive).

In order to support literacy, the pupil's booklets contain key words (as well as on the teaching power points) as well as key literacy tasks built into each project booklet.

As the pupils rotate their marks are recorded on to the department tracking sheet and an average mark is awarded for each project. Over the course of the year a clear picture of their progress can be seen.

In year 9 pupils will build upon some of the key skills techniques and knowledge already learned, but will also be introduced to new skills techniques and knowledge in order to fully prepare them for their options choice.

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. Pupils learn how to take risks, becoming resourceful, innovative, enterprising capable citizens.

High-quality Design and Technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

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4 Week Rotation	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8
Learning Aims	<ul style="list-style-type: none"> -Understand the health and safety requirements when working in a workshop environment -Understand the Design Brief and Key words associated 	<ul style="list-style-type: none"> -Begin Sanding down the pine wood base, working on the quality of finish -Begin your plastic background information 	<ul style="list-style-type: none"> -Drill main hole in the wooden base -Sand the edge of the hole smooth -Complete your Plastic information page 	<ul style="list-style-type: none"> -Begin working on the final quality of finish on the piece of acrylic (pre-cut to size) -Begin drawing out an orthographic drawing of the night light with the design you want laser cutting into the plastic. 	<ul style="list-style-type: none"> -Have your design laser cut onto the piece of acrylic -Complete working on the final quality of finish of your acrylic 	<ul style="list-style-type: none"> -Begin soldering the components for the night light together 	<ul style="list-style-type: none"> -Finish soldering the components for the night light together -Assemble your night light together and apply a final finish to the wood. -Test to ensure the product works 	<ul style="list-style-type: none"> Assemble your night light together and apply a final finish to the wood. Test to ensure the product works -Feed forward based on teacher assessment
Learning outcomes	<ul style="list-style-type: none"> -Simple statements or sentences used -Full detailed sentences used -Full detailed sentences used with full reasons given for all opinions 	<ul style="list-style-type: none"> -Lots of help needed -Some help needed -Works independently -Work independently throughout -Work is not accurate -Work shows some accuracy -Work is mostly accurate -Work is very accurate -Select some of the correct tools -Use tools correctly and safely -Select all the correct tools & equipment -Select some of the correct Techniques & Processes -Select the correct Techniques & Processes -Simple statements or sentences used -Full detailed sentences used -Full detailed sentences used with full reasons given for all opinions 	<ul style="list-style-type: none"> -Lots of help needed -Some help needed -Works independently -Work independently throughout -Work is not accurate -Work shows some accuracy -Work is mostly accurate -Work is very accurate -Select some of the correct tools -Use tools correctly and safely -Select all the correct tools & equipment -Select some of the correct Techniques & Processes -Simple statements or sentences used -Full detailed sentences used -Full detailed sentences used with full reasons given for all opinions 	<ul style="list-style-type: none"> -Lots of help needed -Some help needed -Works independently -Work independently throughout -Work is not accurate -Work shows some accuracy -Work is mostly accurate -Work is very accurate -Select some of the correct tools -Use tools correctly and safely -Select all the correct tools & equipment -Select some of the correct Techniques & Processes -Select the correct Techniques & Processes 	<ul style="list-style-type: none"> -Lots of help needed -Some help needed -Works independently -Work independently throughout -Work is not accurate -Work shows some accuracy -Work is mostly accurate -Work is very accurate -Select some of the correct tools -Use tools correctly and safely -Select all the correct tools & equipment -Select some of the correct Techniques & Processes -Select the correct Techniques & Processes 	<ul style="list-style-type: none"> -Lots of help needed -Some help needed -Works independently -Work independently throughout -Work is not accurate -Work shows some accuracy -Work is mostly accurate -Work is very accurate -Select some of the correct tools -Use tools correctly and safely -Select all the correct tools & equipment -Select some of the correct Techniques & Processes -Select the correct Techniques & Processes 	<ul style="list-style-type: none"> -Lots of help needed -Some help needed -Works independently -Work independently throughout -Work is not accurate -Work shows some accuracy -Work is mostly accurate -Work is very accurate -Select some of the correct tools -Use tools correctly and safely -Select all the correct tools & equipment -Select some of the correct Techniques & Processes -Select the correct Techniques & Processes 	<ul style="list-style-type: none"> -Lots of help needed -Some help needed -Works independently -Work independently throughout -Work is not accurate -Work shows some accuracy -Work is mostly accurate -Work is very accurate -Select some of the correct tools -Use tools correctly and safely -Select all the correct tools & equipment -Select some of the correct Techniques & Processes -Select the correct Techniques & Processes -Simple statements or sentences used -Full detailed sentences used -Full detailed sentences used with full reasons given for all opinions
Required Skills	<ul style="list-style-type: none"> -Understand the hazards in a workshop environment and how to avoid them. -Keeping themselves and others in the room safe -Definitions and explanations -Expository writing 	<ul style="list-style-type: none"> -How to sand and finish a piece of wood correctly and safely -Keeping themselves and others in the room safe 	<ul style="list-style-type: none"> -How to sand and finish a piece of wood correctly and safely -How to use and operate the Pillar Drill -Keeping themselves and others in the room safe -Definitions and explanations -Expository writing 	<ul style="list-style-type: none"> -How to sand and finish a piece of plastic correctly and safely -Draw accurately -How to mark and measure out accurately -Keeping themselves and others in the room safe 	<ul style="list-style-type: none"> -How to transfer CAD onto the laser cutter -How to mark and measure out accurately -Keeping themselves and others in the room safe -Keeping themselves and others in the room safe 	<ul style="list-style-type: none"> -How to correctly solder components together -How to use the soldering iron safely -Keeping themselves and others in the room safe -Keeping themselves and others in the room safe 	<ul style="list-style-type: none"> -How to correctly solder components together -How to use the soldering iron safely -Keeping themselves and others in the room safe -Keeping themselves and others in the room safe 	<ul style="list-style-type: none"> -How to correctly solder components together -How to use the soldering iron safely -Keeping themselves and others in the room safe -Keeping themselves and others in the room safe -Definitions and explanations -Expository writing
Skills & content revisited	<ul style="list-style-type: none"> -Understand the health and safety requirements when working in a workshop environment 	<ul style="list-style-type: none"> -Working on the quality of finish on materials 	<ul style="list-style-type: none"> -Operating the Pillar drill -Working on the quality of finish on materials 	<ul style="list-style-type: none"> -How to add tone to a drawing -How to add presentation techniques to drawings to make them stand out -How to mark our and measure correctly using cm & mm 	<ul style="list-style-type: none"> Working on the quality of finish on materials 	N/A	N/A	N/A
Assessment	<ul style="list-style-type: none"> Open & Directed questions. Written questions Progress tests. Booklet assessment and feedback 	<ul style="list-style-type: none"> Open & Directed questions. Written questions Progress tests. Booklet assessment and feedback 	<ul style="list-style-type: none"> Open & Directed questions. Written questions Progress tests. Booklet assessment and feedback 	<ul style="list-style-type: none"> Open & Directed questions. Written questions Progress tests. Booklet assessment and feedback 	<ul style="list-style-type: none"> Open & Directed questions. Written questions Progress tests. Booklet assessment and feedback 	<ul style="list-style-type: none"> Open & Directed questions. Written questions Progress tests. Booklet assessment and feedback 	<ul style="list-style-type: none"> Open & Directed questions. Written questions Progress tests. Booklet assessment and feedback 	<ul style="list-style-type: none"> Open & Directed questions. Written questions Progress tests. Booklet assessment and feedback Photo of finished work
Literacy	<ul style="list-style-type: none"> Acrylic Design 	<ul style="list-style-type: none"> Quality Appearance Thermo Setting Thermo Plastic Plastic Polymer Translucent Transparent Opaque Pine wood 	<ul style="list-style-type: none"> Quality Appearance Thermo Setting Thermo Plastic Plastic Polymer Translucent Transparent Opaque Pine wood 	<ul style="list-style-type: none"> Quality Appearance Self-Finish 	<ul style="list-style-type: none"> Laser cutting Self-Finish C.A.D Process C.A.M 	<ul style="list-style-type: none"> Flux Soldering Iron L.E.D Solder 	<ul style="list-style-type: none"> Quality Appearance Thermo Setting Thermo Plastic Plastic Polymer Translucent Transparent Opaque Pine wood 	<ul style="list-style-type: none"> Quality Appearance Thermo Setting Thermo Plastic Plastic Polymer Translucent Transparent Opaque Pine wood

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Num	N/A	N/A	N/A	Marking out and measuring in mm using a steel rule	N/A	N/A	N/A	N/A
Year 9 - Resistant Materials –Plastic (acrylic) Night Light: Aims and background of the Project								
Resources	To enable pupils to understand what the subject of Resistant Materials is. Booklet, pens, pencils, literacy mats, teacher PPT to support learning.	To give pupils experience in working in a practical environment with tools and materials they have not used before. Booklet, Grades of sandpaper, Bees wax, Pencil.	To gain health and safety knowledge of working in a practical environment Booklet, Grades of sandpaper, Bees wax, Pencil.	To allow pupils to express themselves creatively. Grades of sand paper, Pencils, Ruler colour pencils.	To encourage independent and resilient learners Laser cutter, Grades of sand paper.	Soldering iron, solder, flux, connector blocks, Colour changing L.E.D, Hot glue gun	Soldering iron, solder, flux, connector blocks, Colour changing L.E.D, Hot glue gun	Soldering iron, solder, flux, connector blocks, Colour changing L.E.D, Hot glue gun , Booklet, Green pens

Cultural Capital & Cross curricular links		
No.	Cross Curricular Link	Examples
1	Literacy and Oracy	Reading for understanding, reading aloud, reading for pleasure, rich discussions. Writing in a range of styles and for different audiences.
2	Numeracy	Mathematical knowledge and skills. The ability to understand and work with numbers.
3	RSE **	Health and well-being, online safety, healthy relationships, sex education
4	SMSC /CITIZENSHIP*	British Values: democracy, individual liberty, mutual respect and tolerance, rule of law. Citizenship: as an individual, in the family, in the local community, on a national and international level. Political, cultural and environmental awareness and understanding. Opportunities outside of the classroom. Visits, visiting speakers, school trips, DofE, workshops.
5	Digital Competency	Word processing, programming, CAD/CAM , internet use, emails, digital presentations, spreadsheets, software and applications.
6	Careers	The world of work, career pathways, Unifrog. Linking curriculum learning to careers (GATSBY Benchmark 4)
7	Enterprise	Leadership, teamwork, resilience, presentation skills, time management, creative and innovative thinking, problem solving
8	Economic Understanding	Money and financial understanding
9	Appreciation of Sports and the arts	Opportunities for participation both in school and off site. Extra-curricular clubs.

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