Design & Technology: Graphics & Resistant Materials

Curriculum intent:	**What does the Design & Technology department want to achieve at Dormston School through the curriculum we provide?** The Design & Technology Department are committed to providing opportunities for pupils to develop their design & technology capability, by combining pupils design and making skills with knowledge and understanding. Using creativity and imagination, pupils design and make products to solve problems in a variety of contexts, considering their own and other's needs and wants. Pupils will acquire a broad range of subject knowledge enabling them to research and evaluate the work of others, create and develop design ideas which lead on to the making of high-quality prototypes and products for a wide range of users. Additionally, pupils learn about, understand and apply the principles of nutrition and learn how to cook
Literacy/Reading/Oracy opportunities:	**Books I can read:** The Way Things Work by David Macaulay, A History of Fashion by Laura Cowan, How Food Works: The Facts Visually Explained by Dk. Sketching and Drawing Techniques for Product Designers by Roselien Steur, The story of food – Giles Coren, A History of Fashion by Laura Cowan, Portfolio Presentation for Fashion designers by Linda Tain, Cooking Up a Storm Paperback– by Sam Stern **Films/TV programmes I can watch:** The Great Interior Design Challenge, The Gadget Show, Inside the Factory, Master Chef. The Great British Sewing Bee, Jimmy's Food Factory, The Blue Planet, The Food Inspectors, George Clarke's –Amazing Spaces **Places I can visit:** Wolverhampton Art Gallery, Birmingham Art Gallery, RAF Cosford, Farmers Markets, The Ikon Gallery, Midlands Art Centre, The Design Museum-Kensington London, BBC Good Food Show, Local Farm Shops

Curriculum rationale Year 7 - 11	Graphics	Resistant Materials	
Year 7	**Sublimation Printed Pencil Case:** Area of Study – 2D design & sublimation printing. • How to carry out a Task Analysis • Evaluation of existing Products • Generation of Design Ideas (2D) • Use of Desk Top Publishing	**Pewter Cast Key Ring:** Area of study – 2D design, ferrous and non-ferrous metals and packaging design • Research into existing products • Generation of design ideas (2D) • Research into the pewter casting process	

	• Sublimation Printing and use of the Heat Press • How to evaluate a completed product **Pocket Torch and Blister Packaging:** Area of Study – Plastics/Electronics/Graphic Design • Introduction to Health and Safety • Task Analysis • Evaluation of existing products • Basic Electronic Symbols • Design Ideas • Correct use of hand tools for working with plastic. • Blister Packaging Design • Vacuum Forming	• Introduction into CAD/CAM- use of Corel Draw X6 and Laser Cutting • Use of hand tools • Health & Safety in the workshop • Manufacture & finishing of a pewter key-ring • Packaging design • How to evaluate a completed product	
Why?	**Sublimation Printed Pencil Case:** To encourage pupils to draw in 2D, analyse an existing product and learn about sublimation printing **Pocket Torch and Blister Packaging:** To teach pupils about Health & Safety in the workshop. To introduce resistant materials (plastics) and basic electronics to pupils. Provide pupils with a range of practical skills using hand tools.	**Pewter Cast Key Ring:** To encourage pupils to develop a basic knowledge of metals and how to shape and finish them to produce a quality final product.	
How parents / carers can support	Encourage pupils in the completion of homework Tasks Ask pupils questions about the products they are making	Encourage pupils in the completion of homework tasks Ask pupils questions about the products they are making	
	Graphics	**Resistant Materials**	

Year 8	**An Introduction to Perspective Drawing:** Area of study- Knowledge of One and Two-Point Perspective **Mouse Mat and Header Tab Packaging based on the work of Famous Designers** Area of study- awareness of the work of others and their impact on society. • Studying existing products • 2D design ideas • Use of Desk Top Publishing • Use of Sublimation Printing and the Heat Press • Use of the Heat Sealer to create Header Tab Packaging	**Design & Manufacture of a wooden mechanical toy:** Area of study – Knowledge of mechanisms & motion • Introduction to mechanisms and types of motion • Studying existing products • 2D design ideas • Model making • Introduction to man-made timbers • Final product manufacture • How to evaluate a finished product	
Why?	**Perspective Drawing –** To understand a range of drawing and communication techniques. **Mouse Mat and Header Tab Packaging based on the work of Famous Designers** To be aware of the work of others and their impact on society. Develop practical skills using CAD/CAM.	**Mechanical toy:** To encourage pupils to develop a knowledge for mechanisms & motion and be able to identify them in everyday products. To help pupils develop their practical skills and begin to understand about man made timbers.	
How parents / carers can support	Encourage pupils in the completion of homework tasks Ask pupils questions about the products they are making	Encourage pupils in the completion of homework tasks Ask pupils questions about the products they are making	

	Product Design	Resistant Materials	Summer
Year 9	**Design and manufacture of a Clock inspired by the design styles – Art Deco & De-Stijl** Area of study- Knowledge of plastics and manufacturing techniques • Research into Art Deco & De-Stijl • 2D Designs • 3D Designs • Model making in card • Manufacturing moulds to use on the vacuum former • Vacuum Forming • Evaluation of completed product	**Design & manufacture of a USB powered lamp:** Area of study – Knowledge of thermoplastics and simple circuits • Introduction to thermoplastics • Introduction to basic circuits and electronic components • Research into existing products • Writing a design specification • 2D design ideas • Evaluating design ideas • Manufacturing a quality product • Evaluating a completed product • Soldering skills • Health and safety in the workshop	
Why?	**Art Deco / De-Stijl Inspired Clock** To help pupils understand the classifications of plastic. Develop design and modelling skills. Safe use of hand tools. Understand how to use the vacuum former.	**USB powered lamp:** To help pupils understand about the variety of plastics available to them when designing. To learn about circuits and basic circuit components To learn how to solder safely and accurately.	
How parents / carers can support	Encourage pupils in the completion of homework tasks Ask pupils questions about the products they are making and skills they have used	Encourage pupils in the completion of homework tasks Ask pupils questions about the products they are making and skills they have used	
	Autumn	**Spring**	**Summer**
Year 10	**Resistant Materials:**	**Resistant Materials:**	**Resistant Materials:**

	Area of study-Man made timbers **Plywood Jigsaw:** • Man-made timbers • Use of hand tools • Knowledge of adhesives • Finishing techniques • Packaging Design Area of study- Thermoplastics **Acrylic Tangram puzzle:** • Thermoplastics • Joining plastics • Cutting & shaping plastics • Finishing plastics • Packaging design Area of study- Natural & Manmade Timbers **Wooden 3D maze game:** • Man-made timbers • Softwoods • Cutting & shaping timbers • Hand tools • Health & safety in the workshop • Finishing timbers • Packaging design Area of study – Exam preparation **Theory topics:** • Hardwoods & softwoods	Area of study- Ferrous metals & natural timbers **Bottle Opener project:** • 2D design ideas • Ferrous metals • Use of hand & power tools • Plastic dip coating • Finishing ferrous metals • Blister packaging Area of study- Thermoplastics **Acrylic desk tidy:** • Thermoplastics • Shaping and cutting plastics • Finishing techniques for plastics • Testing & modelling Area of study – Exam preparation **Theory topics:** • Smart materials • Textiles in technology • Mechanisms and motion	Area of study- Controlled Assessment AQA Exam Board - 50% of final GCSE **Example projects from previous years:** • Solar powered lantern • Outdoor Portable Speaker • Indoor USB powered lamp • Indoor Portable Speaker **Topics covered in Year 10:** • Task analysis of the overall project • Client research & interviews • Research into a design brief; • Ergonomic research • Research into existing products • Developing and writing a design brief and specification • Initial 2D and 3D drawn ideas Area of study – mock exam preparation **Theory topics:** • Approaches to designing • Designing products • Energy & mechanisms • Materials & their properties • Tools, equipment & processes • New & emerging technologies

	• Man-made timbers • Ferrous metals • Non-ferrous metals • Alloys		
Why?	To develop pupils' hand skills and to prepare them for their mock examination in the summer term of Year 10 by covering theory topics in class and for home works.	To develop pupils' hand skills and to prepare them for their mock examination in the summer term of Year 10 by covering theory topics in class and for home works.	50% of final GCSE to be submitted to exam board (AQA) Develops pupils' skills in researching, designing, making and evaluating and prepare them for a technology-based college course/ apprenticeship.
How parents / carers can support	Encourage pupils in the completion of homework Tasks Ask pupils questions about the products they are making and skills they have used	Encourage pupils in the completion of homework Tasks Ask pupils questions about the products they are making and skills they have used	Encourage pupils in the completion of homework Tasks Ask pupils questions about the products they are making and skills they have used
	Autumn	**Spring**	**Summer**
Year 11	**Resistant Materials:** Area of study – Controlled assessment 50% of final GCSE **Topics covered in Year 11:** • Completion of design ideas • Final design chosen • Model/prototype manufacture **Mock exam preparation:** • Approaches to designing • Designing products	**Resistant Materials:** Area of study – Controlled assessment 50% of final GCSE **Topics covered in Year 11:** • Analysis of modelling • Final product manufacture • Manufacturing photo diary • Evaluation of the final completed product **Mock exam preparation:** • Approaches to designing	**Resistant Materials:** Area of study – Final exam preparation 50% of final GCSE **Final exam preparation:** • Approaches to designing • Designing products • Energy & mechanisms • Materials & their properties • Tools, equipment & processes • New & emerging technologies

	• Energy & mechanisms • Materials & their properties • Tools, equipment & processes • New & emerging technologies	• Designing products • Energy & mechanisms • Materials & their properties • Tools, equipment & processes • New & emerging technologies	
Why?	To prepare pupils for the submission of their controlled assessment-50% of their final grade. To equip pupils with the skills they need to follow a technology-based course at college/ in employment/with an apprenticeship	To prepare pupils for the submission of their controlled assessment-50% of their final grade. To equip pupils with the skills they need to follow a technology-based course at college/ in employment/with an apprenticeship	To prepare pupils for their final GCSE examination - 50% of the final grade. To equip pupils with the skills they need to follow a technology-based course at college/ in employment/with an apprenticeship
How parents / carers can support	Encourage pupils in the completion of homework tasks Ask pupils questions about the products they are making and skills they have used	Encourage pupils in the completion of homework tasks Ask pupils questions about the products they are making and skills they have used	Encourage pupils in the completion of examination homework tasks and to complete revision whilst studying at home.