



CURRICULUM PLAN

RESISTANT MATERIALS

BRAMHALL HIGH SCHOOL

Curriculum Intent

YEAR 7

DMA projects that help students to develop the skills, knowledge and understanding to design and make high quality 3D products and to communicate their design journey. -Desk Tidy

YEAR 8

DMA projects that help students to develop the skills, knowledge and understanding to design and make high quality 3D products and to communicate their design journey. Desk Tidy and/or Metal Bug Sculpture

YEAR 9

DMA projects that help students to develop the skills, knowledge and understanding to design and make high quality 3D products and to communicate their design journey. Portable game, sweet dispenser or Key House and Pewter keyring

YEAR 10

DMA projects that help students to develop the skills, knowledge and understanding to design and make high quality 3D products and to communicate their design journey. Angle poise lamp and Wooden box

YEAR 11

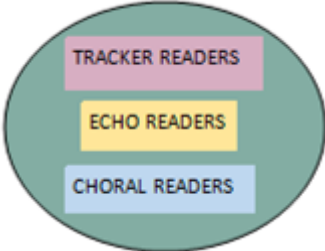
DMA projects that help students to develop the skills, knowledge and understanding to design and make high quality 3D products and to communicate their design journey. Students work on their self-devised NEA projects.

Academic Year: 2026-2027

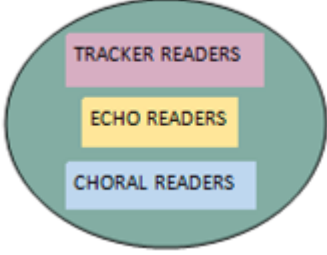
Review Date: July 2026

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YEAR 7

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Yr 7 students remain in a D&T subject for 12 weeks. Yr7 students rotate around all D&T subjects – 3 rotations in Yr7 and 2 in Yr8	Students design and make a personalised desk tidy for an identified target market. They make the product to set dimensions and design the cover and CAM from their own design and research tasks (learning & developing) Skills, Knowledge and Understanding Freya models in lessons linked to disciplinary literacy/keywords	A = AIMS D = Design M = Make E = Evaluate T = Technical Knowledge A1, A2, A3, D1, D2, D3, M1, M2, E3	See assessment planning • Mood board • Target Market • Initial and developed Ideas • Making • Evaluation	Development of CAD work and use of CAM using tutorials Extended reading 	Medium density fibreboard Birch Plywood Pine Softwood Coniferous Deciduous Thermo Plastic Acrylic Finger joint Poly Vinyl Acetate Client Vector Bitmap Specification Manufacturing Ideas Evaluation

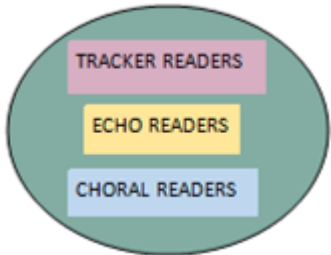
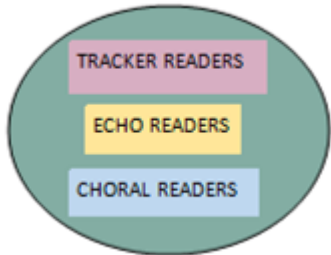
CURRICULUM PLAN – RESISTANT MATERIALS

	 Use of echo, choral and 'Track the Reader' Reading Comprehension tasks Creation of Folder online Target market and mood board Desk Tidy Research & analysis – specification Selection of images from the internet Understanding properties and uses of the 3 categories of Timbers Cad – 2d design Editing – 2d design Size and measurement – 2 d design Use of CAD & CAM Use of hand tools and				
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CURRICULUM PLAN – RESISTANT
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	machines Vector and bitmap awareness Workshop basic safety Downloading simple backgrounds Simplistic experimentation with layout Creation of final product Evaluation against design criteria				
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YEAR 8

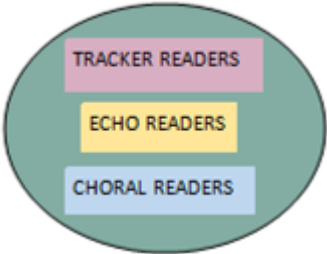
Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
	Students make a metal bug sculpture from steel and recycled aluminium cans. Practical skills –cutting, drilling and shaping steel with files and pein hammer, joining with a rivet gun to form the sculpture. Freya models in lessons linked to disciplinary literacy/keywords 	A = AIMS D = Design M = Make E = Evaluate T = Technical Knowledge A1, A2, D2, D3, M1, M2, E2, T1	See assessment planning • Research into existing products • Research into Metals • Research into uses of metals • Final product	Use of 'Techsoft' 2D design to create a decorated package for the bug sculpture to be sold in. Extended reading 	6Rs Sustainability Categories of metals: ferrous, non- ferrous, alloy Manufacture

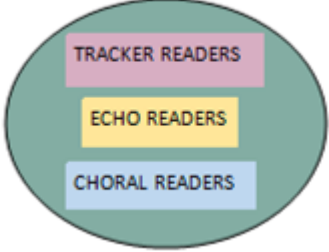
CURRICULUM PLAN – RESISTANT MATERIALS

	Use of echo, choral and 'Track the Reader' Reading Comprehension tasks Understanding and using working drawings Understanding the properties and uses of the 3 categories of metals Understanding Sustainability and the 6Rs Meeting set deadlines Planning time effectively Use of CAD Independently selecting tools and equipment Independently working from a design drawing Independently modifying designs where necessary Utilisation of a working drawing				
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	Independently hand drawing isometric projection of the package design mastery Creation of final product Creativity and originality				
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CURRICULUM PLAN – RESISTANT MATERIALS

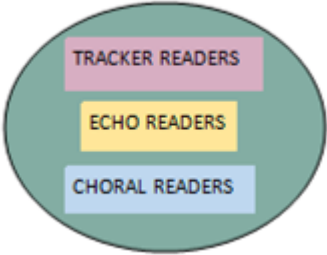
Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
	Students design and make a pinball machine using CAD/CAM Practical skills –making high-quality designs for the pinball machine. Using CAD ['Techsoft'] to draw a design for the pinball machine. Using CAM [laser cutter] to cut out the design and print out the firing mechanism [3D Printer]. The design is assembled using PVA glue and wood screws Drawing in Isometric Freya models in lessons linked to disciplinary	A = AIMS D = Design M = Make E = Evaluate T = Technical Knowledge A1, A2, D2, D3, M1, M2, E2, T1	See assessment planning • Writing a Design Brief • Research into existing products • Design Ideas • Final product	Making a package for the pinball machine Learning to use 'Google Sketch-up' Extended reading 	CAD/CAM Laser cutter Prototypes Design

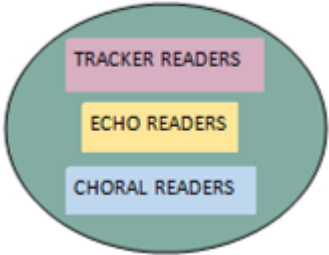
	literacy/keywords  Use of echo, choral and 'Track the Reader' Reading Comprehension task Understanding and using working drawings Understanding CAD/CAM and laser cutting Meeting set deadlines Planning time effectively Use of CAD Independently selecting tools and equipment				
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	Independently modifying designs where necessary Independently hand drawing in isometric projection Creation of final product Creativity and originality				
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YEAR 9

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Y9 pupils remain in a D&T subject for 18 weeks. Students then rotate 2 or 3 rotations dependent upon staffing/option popularity and group size.	Students create a working key hook to carry one key, or a sweet dispenser and design and make a pewter key fob by the process of casting. The material focus of the project is woods and metals. Pupils are to investigate the different types of woods and metals, their associated families and identify properties to a select common metal/wood. Pupils will investigate ways to shape metal. The practical focus will be Low Temperature casting where pupil will design the Mould for their key fob on 'Techsoft' and cast using pewter. Pupils will make use of skills previously taught in Design Technology to	A = AIMS D = Design M = Make E = Evaluate T = Technical Knowledge A1, A2, D1, D5, M1, M2, E2, T1, T3	See assessment planning • Analysis of context • Research of metals. Ways to shape and join metals • Research woods and their properties • Design specification • Modelling and development and drawing in isometric and orthographic projection • Making • Evaluation	A series of skills, knowledge and understanding lessons support the projects. Students rotate round and experience a bespoke programme where they learn essential elements for their examination. Extended Reading 	Dowel Shaft Casting Alloy Steel Aluminium Pewter Orthographic Extrusion Stock forms Pine Scale Tolerance

produce a wooden surround for the key fob or a sweet dispenser – follow a set of manufacturing instructions to make the product. The product is then evaluated against the design specification, orthographic working drawing and as a manufacturer. Freya models in lessons linked to disciplinary literacy/keywords  Use of echo, choral and 'Track the Reader' Reading Comprehension tasks				
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CURRICULUM PLAN – RESISTANT MATERIALS

	Working as an individual Select design theme exceeding set deadlines Independent creation of folders Planning time effectively to utilise lesson and home tasks Problem & design brief mastery Target market mastery Metals Research & analysis – specification mastery Use of VLE for independent study Design and working drawing creation mastery Use of CAD & CAM mastery Independently selecting tools and equipment mastery Independently working from a design drawing mastery Independently modifying designs where necessary mastery Vector and bitmap understanding & mastery Background				
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CURRICULUM PLAN – RESISTANT MATERIALS

	experimentation and innovation Utilisation of an orthographic working drawing mastery Experimentation & layout mastery Creation of final layouts – apply criteria Creation of final products Independent creativity and originality. Evaluation against design criteria Hand skills mastery classes				
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YEAR 10

YEAR 10					
Term 1a	Skills project. Students create a wooden box using a range of wood joints and a dongle made from thermoforming plastic or pewter using a range of tools and equipment safely and skilfully. They will investigate health and safety, use of tools and equipment, families of woods/timbers and metals; and quality control/assurance. The product will then be evaluated against the design specification.	3.1.3-Smart, modern and composite materials 3.1.1 – Sustainability. 3.2.3 Ecological and social footprint 3.2.4 sources and origins of materials 3.2.6 stock forms of timbers and metals 3.2.8 specialist techniques and processes- wastage, addition, deforming and reforming 3.2.8 quality control 3.2.9 surface treatments and finishes-timbers 3.1.1 – Production techniques and systems 3.1.6.1 Material categories- natural and manufactured timbers, metals and alloys. 3.2.5 – Using and working with materials - How to shape and form using cutting, abrasion and addition	See assessment planning Context Analysis Target market profiling, Cam movement research, Design specification, Initial ideas, Modelling and development and orthographic projection, Making, Evaluation	Pupils are also introduced to 2D Design software (Techsoft) and 3D Design [Sketch-Up] they will learn the basics of the software and how to produce decoration and a final drawing of their box using the software. Instructions provided on how to use software to print out on a 3D printer where relevant.	Analysis Context Client

		3.2.8 Specialist techniques and processes 3.3.2 Types of drawing-orthographic, one-point/two-point perspective, isometric, exploded view.			
Term 1b	Modelling Project Students will use a range of modelling techniques- clay, foam, paper and card, MDF, laser cutting to create a model of a hand-held device/golf game. Students will investigate existing products and model their own design.	3.3.4Modelling	MOCK 1 – Students sit a full GCSE	Confidence in using a range of different materials to model aspects of their prototype design.	Folding Perforation Shearing Moulding Wedging Maquette Prototype
Term 2A/B	Lamp research, design and make task. Students are given a mini project that focusses on the research aspects of the NEA after being given the task wording “Lighting solution that reflects influence of a designer or design movement.” They will then design, develop through	3.1.1 society, culture, people 3.1.4 System-input/process/output 3.2.7 Scales of production 3.3.3 ‘The Work of Others’ 3.3.4 Explore and develop their own ideas 3.3.5 communication of ideas 3.3.6 prototype development	MOCK 2 – Students sit a full GCSE Mock Exam. <i>(students are supported with the theme and are prepared within lessons)</i> Complete folder linked to NEA	Appreciation of a range of existing designers and companies that might influence their further work.	Aesthetics Function ACCESS FM Design development Inspiration

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	modelling and make the product under guidance. They will use a range of materials including wood, metal, thermo-plastics and circuits to create the lamp. They will investigate shaping, forming and finishing processes/techniques for plastics and metal.				
Term 3a if time	Football game design and make task. Focus on making a high quality football game from softwoods, manufactured boards, papers, boards and 3D printed polymers.	3.1.5 Mechanical Devices 3.2.7 Scales of production 3.3.8 Tolerances 3.3.9 Material management 3.3.11 Surface treatments and finishes	PRODUCT EMPHASIS – NOT FOLDERWORK Assessing practical tasks – 3D products created	3D Printing of players Photoshops skills used in decoration of the game	3D planning activities Orthographic drawing Manufacturing specification

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Term 3b	GCSE PROJECT THEMES ARE RELEASED BY AQA Students are made aware of the dept. limitations for their NEA projects. NEA/CONTROLLED ASSESSMENT STARTS		Projects negotiated and deadlines agreed before summer break. 4 A3 pages min requirement		
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YEAR 11

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Term 1a	NEA/CONTROLLED ASSESSMENT		MOCK 3 – Students sit a full GCSE Mock Exam. <i>(students are supported with the theme and are prepared within lessons)</i> Mock feedback session		
Term 1b	NEA/CONTROLLED ASSESSMENT		MOCK 3 – Students sit a full GCSE Mock Exam. <i>(students are supported with the theme and are prepared within lessons)</i> Mock feedback session		

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Term 2a	NEA/CONTROLLED ASSESSMENT		MOCK 3 – Students sit a full GCSE Mock Exam. <i>(students are supported with the theme and are prepared within lessons)</i> Mock feedback session		
Term 2b	Submission of Controlled Assessment. Half term				

CURRICULUM PLAN – RESISTANT MATERIALS

Term 3a	Yr11 have tailored revision lessons to prepare them for their exam whilst exploring gaps in learning. Boosters planned and delivered to prepare students.				
Term 3b					