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Y7 Design & Technology					
Term 1.1 Microtruck Project	Term 1.2 Microtruck Project	Review of learning DIRT & summative 2 assessment points: 1) Measuring 2) Final Practical Outcome	Term 2.1 Mechanical Toy Project	Term 2.2 Mechanical Toy Project	Review of learning DIRT & summative 3 assessment points: 1)Types of motion, cams and levers 2)Final Practical Outcome 3) End of year exam
<p>Unit intent:</p> <p>Health and safety in the workshop:</p> <p>During their first half term in Design & Technology students will learn the importance of health and safety in the workshop, including health and safety rules and hazard signs and symbols.</p> <p>Measuring & use of production aids:</p> <p>Students will learn the importance of measuring accurately and the ability to convert units of measurements. Time will be spent teaching students to use the steel rule, try square and mitre square accurately and correctly</p>	<p>Unit intent:</p> <p>Making skills:</p> <p>Students will learn how to manufacture each part of the micro truck</p> <p>The skills will include:</p> <ul style="list-style-type: none"> Marking and measuring accurately Reading an orthographic projection Cutting and shaping timbers and polymers using hand tools Using the pillar drill and sander Using the line bender Working safely and sensibly with tools and machinery Applying appropriate finishes 	<p>Disciplinary knowledge</p> <p>Converting unit of measurement, health and safety. cutting techniques, shaping techniques Joining techniques, finishing techniques, hand tools</p> <p>CST</p> <p>Solidarity Dignity of Work and Participation</p> <p>Careers</p> <p>Discussion around the types of careers that can stem from D&T</p>	<p>Unit intent:</p> <p>Types of motion:</p> <p>During their second term in Design & Technology students will learn about: -</p> <ul style="list-style-type: none"> Types of motion Simple machines 1st, 2nd and 3rd class levers Mechanisms Cams CAD/CAM 	<p>Unit intent:</p> <p>Making skills:</p> <p>Pupils will use the understanding gained to produce a mechanical toy.</p> <ul style="list-style-type: none"> Marking and measuring accurately Reading an orthographic projection Cutting and shaping timbers using hand tools Using the pillar drill and sander Working safely and sensibly with tools and machinery Applying appropriate finishes Assembling components 	<p>Disciplinary knowledge</p> <p>Types of motion. Orders of levers, cutting techniques, shaping techniques Joining techniques, finishing techniques, hand tools</p> <p>CST</p> <p>Solidarity Dignity of Work and Participation</p> <p>Careers</p> <p>Engineering roles and problem solving in the design and development of moving products</p>

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Y8 Design & Technology					
Term 1.1 Toy Boat Project	Term 1.2 Toy Boat Project	Review of learning DIRT & summative 2 assessment points: 1) Drawing skills 2) Final Practical Outcome	Term 2.1 Memphis Microamp Project	Term 2.2 Memphis Microlamp Project	Review of learning DIRT & summative 3 assessment points: 1) Creative drawing and modelling skills 2) Final Practical Outcome 3) End of year exam
<p>Unit intent:</p> <p>Drawing skills:</p> <p>In Y8 D&T students are taught how to communicate using isometric drawing and how to use crating to create more complex isometric shapes.</p> <p>Students are taught how to apply colour to communicate direction of light and how to render to communicate material texture.</p> <p>Students are also taught how to create an exploded view drawing and the effectiveness of these when constructing something.</p>	<p>Unit intent:</p> <p>Making skills:</p> <p>Students complete their first mixed materials project during this half term, manufacturing a boat made of acrylic, pine and aluminium sheet.</p> <p>They will learn to: -</p> <ul style="list-style-type: none"> cut and shape these materials understand which tools and production aids to select depending on the material how to join these materials together. 	<p>Disciplinary knowledge</p> <p>Drawing skills, communicating through drawings, working with polymers, line bending, working to close tolerances</p> <p>CST</p> <p>Solidarity Creation and Environment Dignity of Work and Participation</p> <p>Careers</p> <p>Discussion about careers where people use drawing skills Video of polymer forming in factories</p>	<p>Unit intent:</p> <p>Generating a range of creative design ideas:</p> <p>Students will learn how to produce creative design ideas for their Memphis inspired lamp</p> <p>Design development using SCAMPER:</p> <p>Students will learn the importance of design development and use the SCAMPER technique to develop their ideas. Key terms: - Substitute Combine Adapt Modify Put to other use Erase Replace</p>	<p>Unit intent:</p> <p>Making skills:</p> <p>Students will learn to work with different polymer forming processes including the vacuum former and will have another opportunity to use the line bender.</p> <p>They will then use their creative skills to enhance their polymer lamp with additional components made from timbers and polymers influenced by the Memphis group.</p>	<p>Disciplinary knowledge</p> <p>Design skills, Health and safety. cutting techniques, shaping techniques, joining techniques, finishing techniques, hand tools</p> <p>CST</p> <p>Solidarity Creation and Environment Dignity of Work and Participation</p> <p>Careers</p> <p>Videos about furniture designers (the Memphis group) and their careers</p>

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Y9 Design & Technology					
Term 1.1	Term 1.2	Review of learning DIRT & summative	Term 2.1	Term 2.2	Review of learning DIRT & summative
Biplane Project	Biplane Project	2 assessment points: 1) Final Practical Outcome 2) End of project test	CAD Project	CAD Project	2 assessment points: 1) CAD ideas 2) End of year test
<p>Unit intent:</p> <p>Making skills:</p> <p>In Y9 students begin the year by making a mixed materials biplane.</p> <p>During this term there is more of a focus on independence in the workshop, less class demonstrations and more opportunities to problem solve.</p> <p>Students will be expected to select appropriate tools and production aids, manipulate materials and join materials together appropriately and independently.</p>	<p>Unit intent:</p> <p>Understanding skills:</p> <p>Students will learn about properties of materials including strength, toughness, hardness and malleability.</p> <p>They will learn to apply this when selecting materials.</p> <p>Students will also learn about environmental impacts such as deforestation, the FSC and the 6R's of sustainability.</p>	<p>Disciplinary knowledge</p> <p>Manipulating materials. Working to close tolerances, joining mixed materials, understanding how properties of materials impact on selection</p> <p>CST</p> <p>Solidarity Creation and environment Dignity of Work and Participation</p> <p>Careers</p> <p>Discussion around the types of careers that can stem from D&T</p>	<p>Unit intent:</p> <p>Making skills:</p> <p>In the final half term of KS3 D&T, students are introduced to the industry standard software Fusion 360.</p> <p>Initially they learn how to navigate this software and learn the functions:</p> <p>Create sketch, finish sketch, extrude, fillet, chamfer, offset, trim, modify appearance.</p>	<p>Unit intent:</p> <p>Application:</p> <p>Students then apply these skills to make the following pre designed outcomes: -</p> <p>Toy boat, toy train, wooden chair, shape sorter</p> <p>Once completed pupils are given the assessment of designing a range of products for a client.</p> <p>This is their opportunity to use the skills learn to be creative with Fusion. They are then assessed on the range of ideas they produce.</p>	<p>Disciplinary knowledge</p> <p>Understand CAD & CAM, advantages and disadvantages of CAD & CAM, using 3D software Fusion 360, problem solving, creative outcomes</p> <p>CST</p> <p>Solidarity Creation and Environment Dignity of Work and Participation</p> <p>Careers</p> <p>Discussion around careers in CAD, next steps around options and post – 16 pathways</p>

Y10 Design & Technology								
(A)UTHENTIC	(S)ACRED	(P)ASSIONATE	(I)NSPIRATIONAL	(R)ESILIENT	(E)MPATHETIC			
Advent 1 Toolbox Project	Advent 2 Toolbox Project	Review of learning DIRT & summative 3 assessment points: 1) Materials test 2) Industrial processes 3) Geometry and measures 4) Final Practical Outcome	Lent 1 Mock NEA	Lent 2 Mock NEA	Review of learning DIRT & summative 3 assessment points: 1) Generating ideas 2) Developing ideas	Pentecost 1 Testing	Pentecost 2 NEA live	Review of learning DIRT & summative Summative assessment of Section A
<p>Unit intent:</p> <p>For their first GCSE projects, students will learn how to manufacture the Joiners Toolbox. This introduce a range of complex joints to students.</p> <p>This project aims to introduce:</p> <p>Manufacturing a range of joints using correct production aids, tools and machinery, reading orthographic drawings independently, working to close tolerances, understanding quality control, using templates to manufacture organically shaped parts and reading orthographic drawings.</p> <p>This project will see a mixture of practical and theory lessons.</p>	<p>Unit intent:</p> <p>This half term sees the continuation of the Joiners Toolbox project.</p> <p>Students learn to use CAM to create moulds for casting. They then cast pewter to create a badge for their toolbox.</p> <p>Students learn about permanent and non-permanent joining techniques and assemble the toolbox. select appropriate finishes for the parts of the toolbox.</p> <p>This project will see a mixture of practical and theory lessons.</p>	<p>Disciplinary knowledge</p> <p>Core technical principles Designing and making principles Specialist technical principles</p> <p>CST</p> <p>The Common Good Option for the Poor Peace Creation and Environment The Dignity of Work and Participation</p> <p>Careers</p> <p>BBC bitesize lesson dedicated to careers in the creative industry</p>	<p>Unit intent:</p> <p>During their second term in D&T pupils will learn how to respond to a contextual challenge. They will be encouraged to explore the context and write their own design brief.</p> <p>One of the main focuses this term will be an introduction to industry based computer software Fusion 360 which will enable pupils to design and develop a range of creative and innovative ideas.</p> <p>Core technical and specialist technical principles will be delivered through theory lessons alongside the mock NEA, to ensure pupils have completed the course of study by Christmas of Y11</p>	<p>Unit intent:</p> <p>During this term pupils will be taught how to create manufacturing specifications which they will use to produce a final CAD model.</p> <p>Core technical and specialist technical principles will be delivered through theory lessons alongside the mock NEA, to ensure pupils have completed the course of study by Christmas of Y11.</p>	<p>Disciplinary knowledge</p> <p>Core technical principles Designing and making principles Specialist technical principles</p> <p>CST</p> <p>Dignity Solidarity The Common Good Option for the Poor Peace Creation and Environment The Dignity of Work and Participation</p> <p>Careers</p> <p>Discussion about careers in CAD/CAM and industry</p>	<p>Unit intent:</p> <p>In preparation for beginning the NEA, students will test a range of materials and processes including:</p> <ul style="list-style-type: none">• Cutting and shaping woods, polymers and metals• Line bending and vacuum forming polymers• Casting metals• Using CAD and CAM <p>These skills will be documented and will act as a reflection tool during the NEA.</p>	<p>Unit intent:</p> <p>Students will start their NEA during this half term.</p> <p>Designing and making principles are delivered through the NEA task Students must demonstrate skills in applying the knowledge of the designing and making principles to the six assessment areas;</p> <ul style="list-style-type: none">• Researching and investigating (A)• Writing a design brief (B)• Generating ideas (C)• Developing ideas (D)• Realizing an idea (E)• Reflecting and evaluating (F) <p>Section A will be completed during this half term: 10 marks</p> <ul style="list-style-type: none">• Investigating a contextual challenge• Exploring a design opportunity• Identifying a client with specific wants and needs	<p>Disciplinary knowledge</p> <p>Core technical principles Designing and making principles Specialist technical principles</p> <p>CST</p> <p>Subsidiarity: Students are given 3 different contexts to choose from Options for the poor: considering the needs of a range of clients including the poor and the vulnerable Stewardship of creation</p> <p>Careers</p> <p>Discussions into how the work produced during the NEA would allow students to gain valuable skills for future careers</p>

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Y11 Design & Technology								
Advent 1 NEA live	Advent 2 NEA live	Review of learning DIRT & summative Y11 Mock 2-hour D&T Paper Summative assessment of sections B,C,D and E	Lent 1 NEA live	Lent 2 Recall & Revision	Review of learning DIRT & summative Summative assessment of section F and submission of NEA	Pentecost 1 Recall & Revision	Pentecost 2 Recall & Revision	Review of learning DIRT & summative Exam paper practise Final Design & Technology GCSE paper
Unit intent: NEA Section B and C will be completed during this half term Section C: 20 marks <ul style="list-style-type: none"> Generating ideas Developing ideas using CAD Section B: 10 marks <ul style="list-style-type: none"> Writing a detailed design brief and specification Theory <i>One lesson per fortnight of theory retrieval</i> Ecological and social footprint, sources and origins of materials, selection of materials or components, forces and stresses.	Unit intent: NEA Section D and E will be completed during this half term Section D: 20 marks <ul style="list-style-type: none"> Developing ideas Testing ideas Producing a manufacturing specification Section E: 20 marks <ul style="list-style-type: none"> Manufacturing a commercially viable outcome Prototype development, Selection of materials and components, Tolerances, Material management, Specialist tools and equipment, Specialist techniques and processes Theory <i>One lesson per fortnight of theory retrieval</i>	Disciplinary knowledge Core technical principles Designing and making principles Specialist technical principles <u>CST</u> The Common Good Option for the Poor Peace Creation and Environment The Dignity of Work and Participation <u>Careers</u> Research into the different careers within the environmental field	Unit intent: NEA Section F: 20 marks <ul style="list-style-type: none"> Analysing and testing of the prototype Market testing Prototype modifications Theory <i>One lesson per fortnight of theory retrieval</i> Scales of production, Specialist techniques and processes, Surface treatments and finishes	Unit intent: <i>All lessons dedicated to recall and revision of the core technical principles section of the exam</i> Core technical principles: New and emerging technologies, Energy generation and storage, Developments in new materials, Systems approach to designing, Mechanical devices, Materials and their working properties	Disciplinary knowledge Core technical principles Designing and making principles Specialist technical principles <u>CST</u> Dignity Solidarity The Common Good Option for the Poor Peace Creation and Environment The Dignity of Work and Participation <u>Careers</u> Video on quality control and product testing	Unit intent: <i>All lessons dedicated to recall and revision of the designing and making principles of the exam</i> Designing and making principles: Investigation, primary and secondary data, Environmental, social and economic challenge, The work of others, Design strategies, Communication of design ideas, Prototype development, Selection of materials and components, Tolerances, Material management, Specialist tools and equipment, Specialist techniques and processes.	Unit intent: <i>All lessons dedicated to the specialist technical principles of the exam</i> Specialist technical principles: Selection of materials or components, Forces and stresses, Ecological and social footprint, Sources and origins of materials, Using and working with materials, Stock forms, types and sizes, Scales of production, Specialist techniques and processes, Surface treatments and finishes.	Disciplinary knowledge Core technical principles Designing and making principles Specialist technical principles <u>CST</u> Dignity Solidarity The Common Good Option for the Poor Peace Creation and Environment The Dignity of Work and Participation <u>Careers</u> Discussion on where the careers paths that their chosen further education might lead them to.