

KS3 3D Design Technology Rotation.

Year 7		HT1	HT2
3D design	Topic	Timbers and the Brahma puzzle. Research and intro into materials and techniques	Timbers continued Application of skills and making
	Why this and why now?	Primary schools vary in their delivery of product design. Most students come with very little design knowledge, some come with none, and a few come with some basic knowledge of key words and experience of a basic range of materials and techniques. Most students will never have been in a workshop and never used workshop machinery. Some may have used hand tools but usually from home rather than school. Introduction to the design process allowing students to understand how all topics/design briefs can be approached	Students will continue to use the design process throughout KS3 and into KS4. Research will become more appropriate and refined. Students will experience the basic tools of the workshop and learn how to conduct themselves around tools and equipment. Health and safety will be a significant feature in all workshop lessons. Similar tools will be used in yr 8 to improve handling skills and students will be given instruction on how to set the machines up themselves. Design and presentation skills will be repeated each year with an expectation that students will develop more complex designs and their handling and control of drawing, colouring and annotation. New materials will be introduced with each rotation
	What is the essential knowledge that needs to be remembered?	How to produce independent research Use of keywords to describe the design process What is a design brief What are specifications What is user needs and wants How to generate ideas How to develop presentation	What is success criteria and how do we generate them Handling of tools and equipment Reflection on own work leading to reviewing, modifying, and refining.
	What is the assessment intent and how will you assess?	Verbal feedback throughout lessons. Retrieval and synoptic assessment as do now tasks (address gaps and misconceptions)	<i>Creating a final piece and evaluating it Final Brahma Puzzle will be assessed *in relation to the handling of the equipment and tools and will be fed back against progress descriptors. Students will then produce their own evaluation and formulate a target for the following unit.</i>

		<i>Brahma Puzzle ideas and designs as well as research will be assessed with feedback given against progress descriptors</i>	
What should the end point look like?	Students will be aware of the design process 1 page of research looking at the sea theme for toys 1 page of design ideas based on research and specifications which were devised by the class		<i>Students will have a hand made wooden toy which has been cut out using more than one type of saw. There will be 3 rods which are secured in holes drilled on the pillar drill and the whole thing will be stained using wood stain. Students should be able to explain each of these stages</i>
How does it cover the NC	<ul style="list-style-type: none"> The whole project follows the design process = Designing, solving design problems & making design decisions Discussions to introduce user needs touches on = User needs & user centred design Students introduced to specifications and who can generate them = Develop specifications Understanding timbers and how they grow, looking at sustainability = Environmental impact including: sustainability, product lifecycles, lifecycle analysis, cradle to the grave, circular economy also touches on Responsibilities of designers, engineers & technologists Understanding timbers and discussing manufactured board touches on = Materials & performance of structural elements to achieve functional solutions 		<ul style="list-style-type: none"> Making the timber product= Select & use specialist tools, equipment & machinery Select and use specialist techniques and processes Health and safety

Year 8		HT1	HT2
	Topic	Puppets and Movement Researching and shadow puppets	Puppets continued String puppets
3D design	Why this and why now?	How relates to past learning Continue to build on knowledge of the design process, developing design and presentation skills. Students will use most of the same tools of yr 7 with the expectation of greater control and an ability to adjust the machines to fit their own measurements. Design ideas are becoming more complex and involve moving parts but rely on the same success criteria established in yr7. Students will be encouraged to design	Students will continue to use the design process throughout KS3 and into KS4. Research will become more appropriate and refined. Some similar tools will be used in yr 9 to improve handling skills and students will be given instruction on how to set the machines up themselves. Design and presentation skills will be repeated each year with an expectation that students will develop more complex designs and their handling and control of drawing, colouring and annotation. 3D rendering will start to appear once 2D has been suitably developed

	<p>more independently so that problem solving does not have a fixed conclusion and designing becomes an iterative process.</p> <p>Looking at simple machines will allow students to design with function and see input and output factors effected by design.</p> <p>Development of skill in handling pencil crayon when presenting ideas</p>	<p>New materials will be introduced with each rotation which will also lead to new production and manufacturing techniques, including plastics and CAD</p>
<p>What is the essential knowledge that needs to be remembered?</p>	<p>Research into designers work from different cultures</p> <p>Generate design ideas, showing creativity and links with other designers</p> <p>Review and modify design ideas based on success criteria and specifications</p> <p>Control of materials</p> <p>Understanding the use of simple machines</p> <p>Representation of a design in 2D</p> <p>Handling of tools and machinery</p> <p>Presentation of ideas</p>	<p>Continue to develop skills to Generate design ideas, showing creativity and links with other designers</p> <p>Review and modify design ideas based on success criteria and specifications</p> <p>Control of materials</p> <p>Representation of a design in 2D</p> <p>Handling of tools and machinery</p> <p>Presentation of ideas</p>
<p>What is the assessment intent and how will you assess?</p>	<p>Self assessment, verbal feedback, group discussions will take place during lessons, do now tasks and plenaries. These will be evident on students work (as written comments) or on the feedback slips. (Low stakes testing)</p> <p><i>Puppet ideas and designs as well as research will be assessed with feedback given on a feedback slip/MIB time given.</i></p>	<p><i>Creating a final piece and evaluating it Final Puppet as well as a written evaluation will be assessed with feedback given on a feedback slip/MIB time given.</i></p>
<p>What should the end point look like?</p>	<p>Students will be aware of the design process and will have been able to generate a page of design ideas based on research and specifications. Students will have a shadow puppet made from black card which is cut using a craft knife.</p> <p>Students should have a series of sketches and models which explore movement within designs</p>	<p><i>Students will have a hand made wooden puppet made using the tools and machines explored in year 7 and yr8. The puppet will be painted using skills obtained in yr 7 art lessons and developed with acrylic paint during 3d lessons</i></p>

	<p>How does it cover the NC?</p>	<p>Know how to apply artistic understanding to creating technology products Understand developments in design and technology Evaluation of past and present design and technology so that students develop a critical understanding of its impact on daily life and the wider world Analyse the work of past and present professionals and others to develop and broaden their understanding</p>	<p>Understand what it is to be innovative Understand how more advanced mechanical systems used in their products enable changes in movement and force Know how to apply mathematical understanding to creating technology products</p>
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Year 9		HT1	HT2
3D design	Topic	Memphis lamps Research and design	Memphis lamps CAD and electronics
	Why this and why now?	Students each year will work through the design process learning how different briefs will be presented to them. They will continue to research before generating ideas as was done in year 8. The change from then physically cutting the pieces in yr8 to creating a computer program in yr9 will help to emphasis the importance of planning before making. New materials will be added to their bank of knowledge	To prepare for GCSE and possible future career paths, students will now have accumulated knowledge of a range of materials and techniques which will help when considering future projects. They will be used to the design process and gaining confidence to produce more detailed designs and represent them in 3d drawings and 2d drawings. Reviewing and modifying is becoming more refined to allow for deeper exploration into ideas at GCSE.
	What is the essential knowledge that needs to be remembered?	<ul style="list-style-type: none"> Research into a design movement Generate design ideas, showing creativity and links with other designers Review and modify design ideas based on success criteria and specifications Control of materials 	<ul style="list-style-type: none"> Use of CAD Understanding of basic electronic circuits with key words such as current, positive, negative LED Control of soldering components Presentation of ideas

	Representation of a design in 2 and 3 dimensional drawing	
What is the assessment intent and how will you assess?	Self assessment, verbal feedback, group discussions will take place during lessons, do now tasks and plenaries. These will be evident on students work (as written comments) or on the feedback slips. (Low stakes testing). <i>Lamp ideas and designs as well as research will be assessed with feedback given on a feedback slip/MIB time given.</i>	<i>Creating a final piece and evaluating it Final Lamp as well as a written evaluation will be assessed with feedback given on a feedback slip/MIB time given.</i> In preparation to GCSE Drawings, designs and final product in the style of the theme/historical and cultural links or artist
What should the end point look like?	Students will be aware of the design process and will have been able to generate a page of design ideas based on research and specifications. Students will experience CAD when working with a template on 2d design	<i>Students will assemble an acrylic lamp made via 2d design and the laser cutter. The electric circuit will be soldered and added by the student</i>
How does it cover the NC	<p>Know how to apply computing understanding to creating technology products</p> <p>Know how to apply engineering understanding to creating technology products</p> <p>Understand what it is to be innovative</p> <p>Understand risk taking and balancing risk when creating products</p> <p>Understand developments in design and technology</p> <p>Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions</p> <p>Evaluation of past and present design and technology so that students develop a critical understanding of its impact on daily life and the wider world</p>	<p>Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions</p> <p>Understand how more advanced mechanical systems used in their products enable changes in movement and force</p> <p>Develop and communicate design ideas using annotated sketches</p> <p>Develop and communicate design ideas using detailed plans</p> <p>Develop and communicate design ideas using oral and digital presentations and computer-based tools</p> <p>Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture</p>