

More Able Students at TMWS

Super curriculum: Design & Technology

Subject Design & Technology	Y7
Spring Term 1	Spring Term 2
<p>READ and read information about Fibres and fabrics. Cotton is often blended with polyester. Analyse the benefits of blending these fibres to make fabric for clothing. Flame-resistant finishes are applied to furnishing fabrics, particularly those that are used in public places such as hotel interiors. Explain why this is important for public safety.</p> <p>IN PRACTICE Create a simple applique design. Reinforce a piece of fabric with interfacing, then draw the shape of your design on the reinforced fabric. Place this onto the base of the fabric and stitch carefully around it, following the outline of your design. Cut away the excess fabric on the outside of your design. Stitch over the edge of your design using a zig-zag stitch.</p>	<p>ACTIVITY For a range of different textile products, look at the labels to identify the fibre content for each product. Make a list to compare your findings. What are the most common fibre types? Have you found any fibre blends or mixes? Why do you think these fibres have been used for these products? Present your findings.</p> <p>FIND OUT MORE Find out more information on fabrics: www.youtube.com/watch?v=AAUQNMI dp_Y www.youtube.com/watch?v=QHgNoSYIhYs www.youtube.com/watch?v=SxNHsEXVSMo</p>
	Y8
Spring Term 1	Spring Term 2
<p>READ Research and read information about polymers.</p> <ol style="list-style-type: none"> 1. List two typical applications of polyvinylchloride (PVC). For each, explain why this polymer was used, rather than another named polymer. 2. Explain why a product might be made using the injection-moulding process rather than vacuum forming. <p>IN PRACTICE Design a stand for a mobile phone using a thermoplastic polymer. Create a card prototype of your chosen design. Produce a step-by-step guide with diagrams to explain how to do the following: Cut the polymer to the shape and size that you need. Smooth the edges using a file and wet and dry.</p>	<p>ACTIVITY Look at some examples of polymer products and packaging. Can you identify any recycling symbols and type of polymer used?</p> <p>FIND OUT MORE More information about polymers: www.bbc.co.uk/bitesize/guides/ztxnsbk/revision/2 Lifecycle of plastic https://www.youtube.com/watch?v=erGnf7ws20E</p>

Bend the polymer using the strip heater.	
	Y9
Spring Term 1	Spring Term 2
<p>ACTIVITY</p> <p>The year 5 students from your local primary school are coming on a visit to the Design Technology Department. They have one hour and you need an activity that will get them actively involved in the workshop. On a CAD software program, produce a template of a key fob that they can stick onto a piece of acrylic. They can then file around the template, clean and polish it. Produce a template and plan an hour's lesson.</p>	<p>ACTIVITY</p> <p>Most modern toys now use batteries rather than clockwork. Find out when batteries became the most popular energy storage method for toys. Explain the advantages of this development. What sort of problems did the change cause?</p>
	Y10
Spring Term 1	Spring Term 2
<p>ACTIVITY</p> <p>Create a poster showing an area of land. Label and discuss the possible issues for the environment as a result of modern industrial practices.</p> <p>ACTIVITY</p> <p>Write an essay about a country of your choice. Explain your thoughts on their policies relating to farming, mining and drilling.</p> <p>ACTIVITY</p> <p>Create a table that lists materials that have a good resistance to tensile, compressive, torsion, shearing and bending loads, to aid designers in material choice.</p> <p>ACTIVITY</p> <p>Find three chairs made from different materials and used in different areas of your school, home or garden. Explain why the materials have been used to make each chair. How has the choice of materials been influenced by the method of manufacture?</p>	<p>ACTIVITY</p> <p>Gather a selection of polymer products from around your home; they could be children's toys, kitchenware, or packaging. Try to identify what polymers they are made from and why. You might be lucky and find the polymer initials moulded into the product.</p> <p>FIND OUT MORE</p> <p>More information about polymers: www.bbc.co.uk/bitesize/guides/ztxnsbk/revision/2 Lifecycle of plastic https://www.youtube.com/watch?v=erGnf7ws20E</p> <p><u>Biopolymers</u></p> <p>While many polymers are obtained from crude oil and are synthetic polymers, there are a few polymers that are sourced from plants. These are known as biopolymers. Biopolymers have the advantage of being renewable. However, they are currently expensive and take a long time to manufacture. You do not need to know about biopolymers for your GCSE course, but you may find it interesting to do some further research into biopolymers.</p>
	Y11
Spring Term 1	Spring Term 2
<p>ACTIVITY</p> <p>Investigate products that are innovative and creative. Discuss what you like about them and why you think they are successful.</p>	<p>ACTIVITY</p> <p>Select a common personal or household product, such as a bag, torch or water bottle. Now use your designing skills to reinvent this product to be used in a different way (for example, for a sporting activity, for</p>

<p>You may find the following website a useful starting point: www.innovate-design.co.uk/dragons-den</p> <p>ACTIVITY</p> <p>Create a mood board of your favourite designer or design movement. Use this mood board to inspire you, and produce a page of designs for a product of your choice. Use the shapes, colour and style of your chosen designer or design movement's work and create a new design.</p>	<p>the beach or camping, or by a child or the elderly). Consider ways in which the product needs to be adapted and which materials you might use to make it fit for its new purpose.</p> <p>ACTIVITY</p> <p>On a piece of softwood try out a range of different finishes, such as wood dye, paint, sanding sealer, varnish or wax. Experiment with different application methods, including a brush, sponge, roller, cloth and spray.</p>
	Y7
Summer Term 1	Summer Term 2
<p>READ</p> <p>Research and read information about perspective drawing. Discuss the advantages and disadvantages of virtual modelling.</p> <p>IN PRACTICE</p> <p>Produce an annotated 3D sketch, third angle orthographic drawing and exploded view of a smart phone.</p>	<p>ACTIVITY</p> <ol style="list-style-type: none"> 1. Draw a range of different shapes using isometric projection. 2. Sketch a range of ideas for a toy that helps to improve a child's numeracy skills. 3. Draw your school corridor using one-point perspective. <p>FIND OUT MORE</p> <p>Information about sketching and drawing: www.bbc.co.uk/bitesize/guides/z6jkw6f/revision/3</p> <p>Third angle orthographic projection: www.technologystudent.com/designpro/ortho2.htm</p> <p>Tutorial showing how to draw a hallway using one-point perspective: https://www.youtube.com/watch?v=0ICyLN6I2cY&t=3s</p>
	Y8
Summer Term 1	Summer Term 2
<p>READ</p> <p>Research and read information about Energy and how electricity is generated. Tidal power is an alternative source of energy that is used to generate electricity. Describe how electricity is generated using tidal power, and outline the advantages and disadvantages of using this source of energy.</p> <p>IN PRACTICE</p> <p>Design a future transport vehicle that uses renewable energy sources to power it.</p>	<p>ACTIVITY</p> <p>Imagine that a nuclear power station is to be constructed close to your home town. Discuss the benefits that this might bring to the town and wider area, along with the potential downsides. Decide whether the power plant should be built and justify your choice. This can be presented in a format of your choice.</p> <p>FIND OUT MORE</p> <p>How fossil fuels are formed: www.bbc.co.uk/bitesize/guides/z27thyc/revision/1</p> <p>Nuclear power www.technologystudent.com/energy1/nuclear1.htm</p>
	Y9
Summer Term 1	Summer Term 2
<p>READ</p> <p>Research and read information about polymers.</p>	<p>ACTIVITY</p> <p>Gather a selection of polymer products from around your home; they could be children's toys, kitchenware,</p>

<p>3. List two typical applications of polyvinylchloride (PVC). For each, explain why this polymer was used, rather than another named polymer.</p> <p>4. Explain why a product might be made using the injection-moulding process rather than vacuum forming.</p> <p>IN PRACTICE Design a stand for a mobile phone using a thermoplastic polymer. Create a card prototype of your chosen design. Produce a step-by-step guide with diagrams to explain how to do the following: Cut the polymer to the shape and size that you need. Smooth the edges using a file and wet and dry. Bend the polymer using the strip heater.</p>	<p>or packaging. Try to identify what polymers they are made from and why. You might be lucky and find the polymer initials moulded into the product.</p> <p>FIND OUT MORE More information about polymers: www.bbc.co.uk/bitesize/guides/ztxnsbk/revision/2 Lifecycle of plastic https://www.youtube.com/watch?v=erGnf7ws20E</p> <p><u>Biopolymers</u> While many polymers are obtained from crude oil and are synthetic polymers, there are a few polymers that are sourced from plants. These are known as biopolymers. Biopolymers have the advantage of being renewable. However, they are currently expensive and take a long time to manufacture. You do not need to know about biopolymers for your GCSE course, but you may find it interesting to do some further research into biopolymers.</p>
	Y10
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<p>ACTIVITY Write an article for a design magazine that explains why designers should consider what happens to the products they design at the end of the product's useful life.</p> <p>ACTIVITY Explain the benefits and draw backs of automated systems in factories.</p> <p>ACTIVITY Make a list of the advantages and disadvantages of robots carrying out repetitive tasks in factories.</p> <p>ACTIVITY Write an article that discusses the benefits and disadvantages of automation in the manufacturing industry.</p>	<p>ACTIVITY Write an essay that describes how multicultural Britain has had an impact on the development of products.</p> <p>ACTIVITY Write an article that discourages manufacturers from producing products that have planned obsolescence.</p> <p>ACTIVITY Produce a short discussion document arguing whether Britain would be better off investing in a new nuclear energy power station or a tidal barrage across either the rivers Severn or Dee.</p>
	Y11
Summer Term 1	Summer Term 2
N/A	N/A