

**Rayner Stephens**  
HIGH SCHOOL

**Curriculum  
Intent  
*for*  
Design Technology**

Design Technology is about viewing the world around us. To look at where we are now in the 21<sup>st</sup> century, and where we could be in the future. To know about past and present designers, inventors and innovators and aspire to become people that design and shape the world. In an increasingly technological society we aim to encourage students to think independently and be creatively when working on a problem. We intend to teach students to be problem solvers in a safe learning environment and explain that making mistakes is okay, and part of the development of process. To build upon theory using research and ideas across all subjects and then apply it to solve real world issues. Design Technology is an inspiring practical subject using a broad range of subject knowledge such as mathematics, science, engineering, computing, food science and art. High-quality We aim to empower students to become the people who will solve the issue of tomorrows world. For example, climate change and the quality of life. Design Technology education makes an essential contribution to the creativity, culture, wealth and well-being of the human race and how we can help the world around us.

**Final GCSE Exam**

**Core content and specialist knowledge:**  
Revise and practice exam papers in preparation for your final exam in DT.

**AO3: Evaluate and Test**  
Gain feedback throughout your project and test your final product. Have you met your specification?

**AO2: Realise Design ideas:**  
Manufacture your product using skills and processes used throughout your DT journey.

**AO2: Develop Design Ideas**  
Develop your sketches and communicate ideas. Using modelling techniques.

**AO2: Generate Design Ideas**  
Develop your sketches and communicate ideas. Develop them using various design techniques.

**Y11**

**AO1: Specification and Brief**  
Clarify the needs and wants of the project writing your own brief and design specification.



**Materials:**  
What materials will be appropriate for your product? What materials are sustainable?

**Product research/analysis**

**Design:**

**Make:**  
Addition processes and wood joints. Using skills to develop high quality craftsmanship products.

**Testing:**  
Use various testing and modelling methods to develop your product.

**Evaluate:**  
What skills have you developed? Test your product and consider how you would improve it.

**Y10**

## Apply Sustainability 6 R's knowledge

**GCSE NEA CONTEXTS**

**AO1: Investigate the design possibilities:**  
What is the design context? What research can you carry out to gather ideas?

**Evaluate:**  
What skills have you developed? Test your product and consider how you would improve it.

**Design: CAD**  
What is computer aided design? Learn to use the basics of Photoshop to design products.

**Evaluate:**  
What skills have you developed? Test your product and consider how you would improve it.

**Make:**  
Develop your design through iterative processes and modelling, testing & evaluating before making a final product.

**Design:**

**Pewter Casting Project**

**Materials research**

## Recall Sustainability 6 R's

**Recall Health and Safety**



**Recall: CAD**  
What is computer aided design? Are you able to use the basics of 2D software to design products.

**Design: CAD**  
What is computer aided design? Learn to use the basics of 3D software to design products.

**Modelling:**  
Will my product work? What can I do to improve it?

**Make:**  
Can you make an accurate product using machines and tools independently?

**Evaluate:**  
What skills have you developed? Test your product and consider how you would improve it.

**Baseline Assessment**

**Y9**

## Recall Sustainability 6 R's

**Evaluate:**  
What makes a good drawing? How can you improve your skills?

**Evaluate:**  
At each stage of making, how can you improve your product? Would you change any thing?

**Make**

**Design**

**Bottle Balance Project**

**Materials research**

**Recall Health and Safety**

**Baseline Assessment**

**Isometric Drawing**

## Research Sustainability 6 R's



**Introduction to CAD**  
What is computer aided design? Learn to use the basics of 2D software to design products.

**Design: CAD**  
What is computer aided design? Learn to use the basics of 2D software to design products.



**Make:**  
What is CAM? Use the laser cutter to produce your final product.

**Evaluate:**  
How has CAD / CAM helped you to make a product?

**Evaluate:**  
What makes a good drawing? How can you improve your skills?

## Introduction to Sustainability 6 R's

**Y8**



**Oblique Drawing**



**Mechanisms:**  
Motions, gears, levers, pulleys, etc.

**Evaluate:**  
Does your product work? How can you fix problems?

**Materials:**  
Working with MDF, cutting and finishing techniques.

**Make**

**Design**

**Materials research**



**Introduction to the workshop:**  
Health and Safety

**Baseline Assessment:**  
What do you already know about DT?

**Y7**

A wide range of fun and exciting mini projects that teach you valuable skills in the workshop. Understanding different materials and how they work.

## Year 8 – Design and Technology


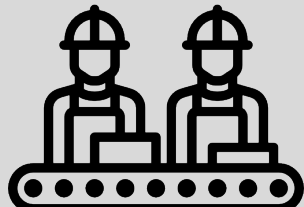
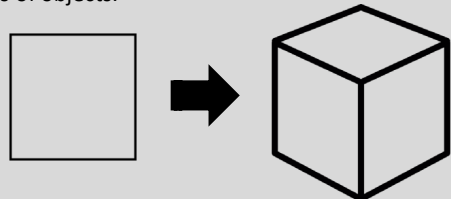
<b>Curriculum intent</b>	<p>The aim of the Design Technology curriculum is to ensure that all students have the confidence and ability to work in a practical environment. The intention is to develop technical knowledge, and design and make skills. In year 8 this will be based around wood as a material group allowing students to be exposed to more challenging opportunities. To develop skills in research, sketching, foam modelling and handling workshop tools. Midway through the term the use of CAD/CAM is explored to investigate and know about new and emerging technologies.</p>					
<b>Term</b>	<b>Autumn 1 (HT1)</b>	<b>Autumn 2 (HT2)</b>	<b>Spring 1 (HT3)</b>	<b>Spring 2 (HT4)</b>	<b>Summer 1 (HT5)</b>	<b>Summer 2 (HT6)</b>
<b>Knowledge</b>	<p><u>Bottle Balance</u> The project offers the opportunity to explore more formal drawing styles, with simple orthographic drawing used to convey the concept of scale and accuracy. The use of modelling using blue foam allows learners to begin gaining an appreciation for material thickness and how complexity impacts on their practical ability.</p> <p><u>Isometric Drawings</u> Learning how to draw Isometric is a valuable skill as it is a simple type of technical drawing of graphical projection used for producing three-dimensional (3D) images of objects.</p>	<p><u>CAD -CAM</u> Computer-aided design is the use of computers to aid in the creation, modification of a design. Learners will learn to use 3D Design software to increase the productivity of their design ideas, improve the quality and accuracy of products, to create a database for manufacturing. CAD output is in the form of electronic files for printing.</p> <p><u>Sustainability</u> Making products and considering their impact on the natural world.</p>	<p><u>Bottle Balance</u> The project offers the opportunity to explore more formal drawing styles, with simple orthographic drawing used to convey the concept of scale and accuracy. The use of modelling using blue foam allows learners to begin gaining an appreciation for material thickness and how complexity impacts on their practical ability.</p> <p><u>Isometric Drawings</u> Learning how to draw Isometric is a valuable skill as it is a simple type of technical drawing of graphical projection used for producing three-dimensional (3D) images of objects.</p>	<p><u>CAD -CAM</u> Computer-aided design is the use of computers to aid in the creation, modification of a design. Learners will learn to use 3D Design software to increase the productivity of their design ideas, improve the quality and accuracy of products, to create a database for manufacturing. CAD output is in the form of electronic files for printing.</p> <p><u>Sustainability</u> Making products and considering their impact on the natural world.</p>	<p><u>Bottle Balance</u> The project offers the opportunity to explore more formal drawing styles, with simple orthographic drawing used to convey the concept of scale and accuracy. The use of modelling using blue foam allows learners to begin gaining an appreciation for material thickness and how complexity impacts on their practical ability.</p> <p><u>Isometric Drawings</u> Learning how to draw Isometric is a valuable skill as it is a simple type of technical drawing of graphical projection used for producing three-dimensional (3D) images of objects.</p>	<p><u>CAD -CAM</u> Computer-aided design is the use of computers to aid in the creation, modification of a design. Learners will learn to use 3D Design software to increase the productivity of their design ideas, improve the quality and accuracy of products, to create a database for manufacturing. CAD output is in the form of electronic files for printing.</p> <p><u>Sustainability</u> Making products and considering their impact on the natural world.</p>
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Health and safety</li> <li>• Graphics based covering sketching in 2D and 3D</li> </ul>	<ul style="list-style-type: none"> <li>• Computer-aided design</li> <li>• Computer-aided manufacture</li> </ul>	<ul style="list-style-type: none"> <li>• Health and safety</li> <li>• Graphics based covering sketching in 2D and 3D</li> </ul>	<ul style="list-style-type: none"> <li>• Computer-aided design</li> <li>• Computer-aided manufacture</li> </ul>	<ul style="list-style-type: none"> <li>• Health and safety</li> <li>• Graphics based covering sketching in 2D and 3D</li> </ul>	<ul style="list-style-type: none"> <li>• Computer-aided design</li> <li>• Computer-aided manufacture</li> </ul>

	<ul style="list-style-type: none"> <li>• Isometric drawing of simple components</li> <li>• Technical vocabulary, mathematical terms and measurement</li> <li>• Modelling in foam to produce scale prototypes</li> <li>• Quality outcomes produced using workshop skill and equipment</li> <li>• Packaging design</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying modification</li> <li>• OCC Puzzles</li> <li>• The 6 R's</li> <li>• Precious plastics</li> <li>• Sustainable Timber</li> <li>• The morals of sustainability</li> <li>• Practical</li> </ul>	<ul style="list-style-type: none"> <li>• Isometric drawing of simple components</li> <li>• Technical vocabulary, mathematical terms and measurement</li> <li>• Modelling in foam to produce scale prototypes</li> <li>• Quality outcomes produced using workshop skill and equipment</li> <li>• Packaging design</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying modification</li> <li>• OCC Puzzles</li> <li>• The 6 R's</li> <li>• Precious plastics</li> <li>• Sustainable Timber</li> <li>• The morals of sustainability</li> <li>• Practical</li> </ul>	<ul style="list-style-type: none"> <li>• Isometric drawing of simple components</li> <li>• Technical vocabulary, mathematical terms and measurement</li> <li>• Modelling in foam to produce scale prototypes</li> <li>• Quality outcomes produced using workshop skill and equipment</li> <li>• Packaging design</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying modification</li> <li>• OCC Puzzles</li> <li>• The 6 R's</li> <li>• Precious plastics</li> <li>• Sustainable Timber</li> <li>• The morals of sustainability</li> <li>• Practical</li> </ul>
<b>Assessments</b>	Progress Test 1, including extended written answer. Oblique and Isometric drawings. Practical outcome - model and working prototype.	Quality control check against design specification and evaluation. Sustainability test, with high value question.	Progress Test 1, including extended written answer. Oblique and Isometric drawings. Practical outcome - model and working prototype.	Quality control check against design specification and evaluation. Sustainability test, with high value question.	Progress Test 1, including extended written answer. Oblique and Isometric drawings. Practical outcome - model and working prototype.	Quality control check against design specification and evaluation. Sustainability test, with high value question.
<b>Enrichment</b>	<a href="https://technologystudent.com/despro_fish/desprocon1.html">https://technologystudent.com/despro_fish/desprocon1.html</a>	<a href="https://classroom.thenational.academy/lessons/how-can-nature-be-used-to-inspire-function-and-form-c9jk8r">https://classroom.thenational.academy/lessons/how-can-nature-be-used-to-inspire-function-and-form-c9jk8r</a>	<a href="https://technologystudent.com/despro_fish/desprocon1.html">https://technologystudent.com/despro_fish/desprocon1.html</a>	<a href="https://classroom.thenational.academy/lessons/how-can-nature-be-used-to-inspire-function-and-form-c9jk8r">https://classroom.thenational.academy/lessons/how-can-nature-be-used-to-inspire-function-and-form-c9jk8r</a>	<a href="https://technologystudent.com/despro_fish/desprocon1.html">https://technologystudent.com/despro_fish/desprocon1.html</a>	<a href="https://classroom.thenational.academy/lessons/how-can-nature-be-used-to-inspire-function-and-form-c9jk8r">https://classroom.thenational.academy/lessons/how-can-nature-be-used-to-inspire-function-and-form-c9jk8r</a>

## Year 8 Design and Technology Autumn Term Knowledge Organiser

Key Vocabulary:		
1	Form	Form is the shape, visual appearance, or configuration of an object. In other words – how a product looks.
2	Function	An activity that is natural to or the purpose of a person or thing. In other words – how a produce works.
3	Equilibrium	The condition of a system in which all competing influences are balanced. There are three types of equilibrium: stable, unstable, and neutral.
4	Scale Models	A scale model is a physical model which is geometrically similar to an object (known as the prototype). Scale models are generally smaller than large prototypes such as vehicles, buildings. Models built to the same scale as the prototype are called mock-ups.
5	Man-Made Boards	Manufactured boards are timber sheets which are produced by gluing wood layers or wood fibres together. Manufactured boards often made use of waste wood materials. Manufactured boards have been developed mainly for industrial production.
6	Design Brief	A design brief is a document for a design project developed by a person or team in consultation with the client/customer. They outline the deliverables and scope of the project; function and aesthetics, timing, budget, etc.
7	Specification	It is a list of criteria that the product needs to meet if it is to be successful.

Bottle Balance		
8	Coping Saw	A coping saw is a type of bow saw used to cut intricate external shapes and interior cut-outs in woodworking or carpentry.
9	File	File (tool), a tool used to remove fine amounts of material from a workpiece.
10	Glasspaper	Glasspaper and sandpaper are names used for a type of coated abrasive that consists of sheets of paper or cloth with abrasive material glued to one face.
11	Edge Treatment	The edge treatment can affect functionality and performance. Edging is done for safety, aesthetic, functionality, cleanliness, improved dimensional tolerance, and to prevent chipping. Edging is generally described as a grinding process used to remove the sharp or raw edge of cut wood.
12	Dimension	a measurable extent of a particular kind, such as length, breadth, depth, or height.
13	Diameter	A diameter of a circle is any straight line segment that passes through the centre of the circle and whose endpoints lie on the circle.
14	Radius	A radius of a circle or sphere is any of the line segments from its centre to its perimeter, and in more modern usage, it is also their length. The name comes from the Latin radius, meaning ray but also the spoke of a chariot wheel.

3D Design	
15	<p><b>Bottle Balance - What is it?</b></p> <p>A unique device to display or store a bottle!</p> 
16	<p><b>Manufacture - What is it?</b></p> <p>A pulley is a wheel on an axle or shaft that is designed to support movement and change of direction of a taut cable or belt, or transfer of power between the shaft and cable or belt.</p> 
15	<p><b>Oblique Projection</b></p> <p>It is a simple type of technical drawing of graphical projection used for producing three-dimensional (3D) images of objects.</p> 
16	<p><b>Evaluation</b></p> <p>Designers evaluate their finished products to test whether they work well and if design can be corrected or improved. It is important to evaluate your work constantly during the project to see if it is on track and so that improvements can be built-in throughout the design process, not just at the end.</p>

# Year 8 Design and Technology Summer Term Knowledge Organiser



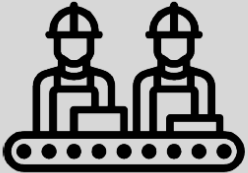
## Key Vocabulary:

1	Natural	Existing in or derived from nature; not made or caused by humankind. For example, gold is naturally occurring but a gold bar or gold ring is man-made.
2	Environment	The natural environment or natural world encompasses all living and non-living things occurring naturally, meaning in this case not artificial. The term is most often applied to the Earth or some parts of Earth.
3	Sustainability	A societal goal with three dimensions: the environmental, economic and social dimension. Environmental sustainability occurs when natural resources are preserved.
4	Fossil Fuels	A fossil fuel is a hydrocarbon-containing material formed naturally in the earth's crust from the remains of dead plants and animals that is extracted and burned as a fuel. The main fossil fuels are coal, crude oil and natural gas.
5	CAD	Computer-aided design is the use of computers to aid in the creation, modification, analysis, or optimization of a design. This software is used to increase the productivity of the designer, improve the quality of design, improve communications through documentation, and to create a database for manufacturing.
6	CAM	Computer Aided Manufacturing is the use of software and computer-controlled machinery to automate a manufacturing process.

## Sustainable Phone Holder

7	Coping Saw	A coping saw is a type of bow saw used to cut intricate external shapes and interior cut-outs in woodworking or carpentry.
8	File	File (tool), a tool used to remove fine amounts of material from a workpiece.
9	Glasspaper	Glasspaper and sandpaper are names used for a type of coated abrasive that consists of sheets of paper or cloth with abrasive material glued to one face.
10	Edge Treatment	The edge treatment can affect functionality and performance. Edging is done for safety, aesthetic, functionality, cleanliness, improved dimensional tolerance, and to prevent chipping. Edging is generally described as a grinding process used to remove the sharp or raw edge of cut wood.
11	Dimension	a measurable extent of a particular kind, such as length, breadth, depth, or height.
12	Diameter	A diameter of a circle is any straight line segment that passes through the centre of the circle and whose endpoints lie on the circle.
13	Radius	A radius of a circle or sphere is any of the line segments from its centre to its perimeter, and in more modern usage, it is also their length. The name comes from the Latin radius, meaning ray but also the spoke of a chariot wheel.

## 3D Design

13	<b>Pine (softwood)</b>
Pine wood is a relatively cheap wood used in the building trade and for furniture. It is pale in colour, quite easy to cut and shape. It has a wider grain making it somewhat weaker than other hardwoods.	
	
14	<b>Mahogany (hardwood)</b>
Mahogany is quite expensive and is used for good quality furniture and hardwood windows. It is light brown in colour and more difficult to cut and shape compared to a softwood such as pine. The closer grain makes it stronger.	
	
15	<b>Manufacture - What is it?</b>
Use specialist tools techniques processes equipment and machinery precisely and use a wider more complex range of materials components taking into account their properties.	
	
16	<b>Evaluation</b>
Designers evaluate their finished products to test whether they work well and if design can be corrected or improved. It is important to evaluate your work constantly during the project to see if it is on track so that improvements can be built-in throughout the design process, not just at the end.	