



Curriculum Intent

Subject ...Year 8 Design & Technology



PRIORITIES IN WHOLE SCHOOL CURRICULUM INTENT

- Enjoyment of learning
- Knowledge acquisition and recall
- Extensive vocabulary
- Effective communication through writing, speaking & listening, and use of technology
- Numeracy
- Critical evaluation of information
- Enterprise and problem-solving
- Working with others

KEY QUESTIONS TO CONSIDER

- 1. Why has content been selected?** Is there sufficient focus on the most powerful knowledge, concepts and skills?
- 2. Does learning provide sufficient challenge?** Is there sufficient challenge for all learners in all year groups?
- 3. Why is learning sequenced in this way?** Does the sequence enable students to build on prior learning, and learn in increasing breadth and depth over time?
- 4. How is learning sequenced or spaced to promote long-term memory?**

SUBJECT CURRICULUM INTENT

Design and Technology (D&T) is the inspiring, rigorous and practical subject which prepares all young people to live and work in the world of designing and industry. Design and technology build on the skills and knowledge that students will need when entering the working environment and leverages increasingly sophisticated resources like 3D printer and laser cutters to keep up with the ever-evolving industry and practices. Design and Technology provides opportunities to learn about manufacturing and advancements in new technology, using a wide variety of skills from using hand tools to developing their understanding of virtual modeling and the use of sophisticated CNC machines. Additionally, it provides excellent opportunities for students to develop and apply value judgments of an aesthetic, economic, moral, social, and technical nature both in their own designing and when evaluating the work of others.

PDE Links

- Developing responsible, respectful and active citizens who are able to play their part and become actively involved in public life as adults.
- Developing students' character, which is defined as a set of positive personal traits, dispositions and virtues that informs their motivation and guides their conduct so that they reflect wisely, learn eagerly, behave with integrity and cooperate consistently well with others – this gives students
- What is the impact of human activity?
- What is the impact of modern lifestyle on the planet?

Essential knowledge

- Students will need to be able to identify the different materials used and their properties.
- What is the difference between the different categories of materials
- Be able to identify the different Cams and range of movements.
- Students will be able to identify the different range of movements (liner, rotary, reciprocating)
- Understand the core principles of sustainability and its links to the environment
- Be able to understand the inputs and outputs of mechanical mechanisms

Essential Skills

- Students will be able to select the correct tools to complete their projects
- Students will be able to use the different types of machinery at a basic level
- They will be able to use new machinery safety and understand the PPE for each machine
- Be able to use a range of hand tools and marking tools
- Students will be able to drill, cut and shape accurately
- Student will be able to make complex models using card
- They will be able to **design on stock forms**

YEAR 8					
	KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	FUTURE DEVELOPMENT
Term 1	<p>Recycling Poster project</p> <p>Students will have a basic understanding and knowledge about different materials, their life cycles and the importance of the 3 R's (Recycle, Reduce, Reuse)</p> <p>Students will know the positive and negative impacts of each material. (Plastic, Timber, Metal)</p> <p>Students will know how to design and make something for a target market, following specification criteria.</p> <p>Students will also understand what a mechanism is and how they work, knowing the difference between levers and linkages.</p> <p>Students will learn how to construct and layer materials appropriately.</p> <p>Students will be able to complete the project with target criteria in place, and designing for a purpose.</p> <p>They will understand and know how to alter and improve an existing mechanism. Learning how to up and down scale, creating different angles</p> <p>Understand where timber-based materials come from and how they are seasoned ready for manufacturing.</p> <p>Understand about mining, drilling and farming and their environmental impacts.</p> <p>Understand about deforestation and the environmental impact it has on the world.</p> <p>Understand about which processes contribute to global warming and atmospheric pollution understand the social issues in the design and</p>	<p>Design</p> <p>user centred products.</p> <p>Make</p> <p>Card Modelling</p> <p>Evaluate</p> <p>Testing</p> <p>Technical knowledge</p> <p>fair trade</p> <p>Sustainability</p> <p>3 R's</p> <p>Materials and their working properties</p>	<p>Literacy- Writing, evaluating, methodology, fact sheets, persuasive writing.</p> <p>Maths- Measurements, multiplication, angles.</p> <p>Students will know the positives and benefits of each material, and be able to use them in a sustainable manner.</p> <p>Students will know how they can reuse products to sustain using new resources.</p> <p>Students will have the skills to identify what they need to find out and research to ensure their product is targeted appropriately.</p> <p>Students will have the skills of being able to pick the correct mechanism to achieve the right movement.</p> <p>Students will learn how to adapt mechanisms to get the outcome they want.</p> <p>Use the design brief to create a set of initial design ideas by using the iterative design process.</p> <p>Using card (templates) and split pins model classes of levers, linkages and gear trains.</p>	<p>The projects in year 8 teach students about the different motions involved in the different types of mechanisms we use in our daily lives. Without these mechanisms the industrial world would be unable to function showing that this is an integral part of industry and manufacturing. We also teach students about sustainability and the environment and help students to understand the purpose and uses of each material and understand the affects they all have on the planet and society. This will help students in later life because they need to know how to recycle and dispose of materials effectively and understand about products life cycles. Our students are the future, they need to understand how we can prevent global warming and other factors which are affecting our environment and wildlife. students will be able to evaluate and analyse the success of their prototype product and suggest potential future modifications. Student will need to learn to become independent as the project evolves giving them essential life skills.</p>	<p>Students to learn about different types of energy.</p> <p>Student learn about finite materials</p>

	<p>manufacture of products and the need for fair trade in the world.</p> <p>Understand how polymers are manufactured from crude oil and the processes of fractional distillation and cracking</p> <p>Students will learn the basics of each material, and understand how to utilise the material effectively.</p> <p>Understand where timber-based materials come from and how they are seasoned ready for manufacturing.</p> <p>Understand how metal is extracted from ore and the process of refining them ready for manufacturing.</p> <p>Understand how polymers are manufactured from crude oil and the processes of fractional distillation and cracking.</p> <p>Students will learn the environmental factors of each material. Understand about mining, drilling and farming and their environmental impacts.</p> <p>Understand about deforestation and the environmental impact it has on the world.</p> <p>Understand about which processes contribute to global warming and atmospheric pollution understand the social issues in the design and manufacture of products and the need for fair trade in the world.</p> <p>Students will learn how to produce user centred products. Students will learn about inputs and outputs of different mechanisms and understand the order of levers. Students will design their own mechanisms with influence from the existing mechanisms.</p>				
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<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Term 2</p>	<p>Cam toy Project</p> <p>Timbers What names and categories are already understood?</p> <p>Research packs on hardwoods, softwoods, manufactured boards</p> <p>Discussion of properties and demonstration with the material samples of some of these properties.</p> <p>Students look at moving toys made of a variety of timbers and identify which timber has been used and why.</p> <p>Key names of materials and their properties</p> <p>Names of common mechanisms and changing direction of force.</p> <p>Links to maths for the. Looking at gear ratios, calculating angles in degrees, action of forces.</p> <p>Stock sizes to be explained and linked to practical application</p>	<p>Design</p> <p>user centred products.</p> <p>Make</p> <p>Card modelling</p> <p>Manufacturing Cams</p> <p>Evaluate</p> <p>Testing</p> <p>Technical knowledge</p> <p>Materials and their working properties</p> <p>Mechanical devices</p> <p>Types of motion</p> <p>Names of common mechanisms</p> <p>Types of forces</p>	<p>Maths- Measurements, multiplication, angles.</p> <p>Literacy- Writing, evaluating, methodology.</p> <p>Understand how to evaluate and improve a design using a card model.</p> <p>Understand how to card model a design.</p> <p>Students produce design solutions for a moving toy (autometer, pull along toy etc.) A more guided approach taken with this outcome as it is the first project.</p> <p>Annotation used to justify all design decisions – theory of materials and mechanical devices used to assist.</p> <p>Re-visiting names and types of mechanism and motion.</p> <p>Working examples of mechanisms produced to embed understanding.</p> <p>Annotation used to justify all design decisions – theory of materials and mechanical devices used to assist.</p> <p>Samples carried out to test Cam systems and movements</p>	<p>Students will progress onto learning about Cams because it links to the previous subject area of mechanisms, which will help the students make connections and consolidate understand mechanism and how these affect Cams. Students will learn some of the fundamentals in engineering this will benefit them in regards to understand how gears and movement will work and how everyday products and machines operates students will be able to evaluate and analyse the success of their prototype product and suggest potential future modifications.</p>	
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