

Y7 Design & Technology

Through a variety of creative and practical activities, pupils in KS2 will have been taught some of the knowledge, understanding and skills needed to engage in an iterative process of designing and making. This will include the use of research and investigation, techniques to generate, develop, model and communicate their ideas, the appropriate selection from and safe use of a wide range of tools, equipment and materials and the skills and techniques to analyse and evaluate products. In Y7 the curriculum is designed to extend and challenge this knowledge, understanding and skills with a creative design and make project (which includes the use of electrical systems) and related key knowledge.

| WHAT? | WHY? | HOW? | HOMEWORK: | SUPPORT: |
|---|---|---|---|---|
| ACRYLIC TWISTER / TIMBER MOBILE PHONE STAND/ TIMBER TRINKET BOX | APPROXIMATELY 50% OF THIS PROJECT WILL ACT AS A VEHICLE FOR THE FOLLOWING KEY KNOWLEDGE: | APPROXIMATELY 50% OF THIS PROJECT WILL BE BASED UPON PRACTICAL SKILLS AND TECHNIQUES INCLUDING: | | |
| | How energy is generated and stored in order to choose and use appropriate sources to make products; including the advantages and disadvantages of fossil fuels – oil, gas, coal, biofuels – biodiesel and biomass, tidal, wind, solar and hydroelectric. | Safe working practice | Clear and concise Key Knowledge Organiser Sheets are shared with students to support them with their homework. | A useful website for students studying Design & Technology is called 'technologystudent.com'. Students should type into their browser the website name and then the particular area of Design & Technology they require e.g. technology student - energy. www.technologystudent.com |
| | How products or systems can be powered including batteries and cells, solar cells, mains electricity and wind power. | Marking out using specialist tools | Homework tasks will be to research, revisit and revise this Key Knowledge. Students are expected to use their Key Knowledge | Another useful website is bbc bitesize: https://www.bbc.co.uk/bitesize/examspecs/zb6h92p |
| | How electronic systems enable products to function including the role of switches, resistors and light emitting diodes (LEDs) in electronic systems. | Thermoforming polymer | Reflection Journals to record their homework. | For example see links: https://www.bbc.co.uk/bitesize/guides/z4qdqhv/revision/1 |
| | The categorisation of the types, properties and structure of thermoforming and thermosetting polymers. To apply knowledge and understanding of working properties, characteristics, applications, advantages and disadvantages of acrylic, high impact polystyrene (HIPS) and biodegradable polymers e.g. Biopol®, polyester resin and urea formaldehyde. | Drilling and shaping polymer | Teachers will ask to see students' Reflection Journals intermittently throughout the project. | https://www.bbc.co.uk/bitesize/guides/zd4bc6/revision/1 https://www.bbc.co.uk/bitesize/guides/zdmqmsg/revision/1 https://www.bbc.co.uk/bitesize/guides/zrrvqdm/revision/2 https://www.bbc.co.uk/bitesize/guides/zrrvqdm/revision/1 https://www.bbc.co.uk/bitesize/guides/zvkck2p/revision/4 |
| | Properties of the above polymers including insulator of heat, insulator of electricity and toughness. | Use of CAD | | |
| | How to analyse their product including the specification criteria of function, user requirements and aesthetics. | Use of CAM | | |
| | The work of past and present designers and companies including Tesla. | Creating a simple circuit using electronic components | | |
| | Develop and use a range of communication techniques to present design ideas, including freehand sketching (2D and/or 3D), annotated sketches and computer-aided design (CAD). | Using standard components to assemble a product | | |
| | Record and justify design ideas clearly and effectively using written techniques. | Shaping timber & plastics | | |
| | | Drilling timber & plastics | | |
| | | Cutting timber and plastics | | |
| | | Applying a finish to timber (plastics are self-finishing) | | |