



3-10-25

Chellaston Academy

Design & Technology	Year 7&8 Curriculum
Intent In Year 7&8 students will follow a varied curriculum, which provides an equal opportunity for all students to recognise and appreciate the need for good design and quality manufacturing of products, which are suitable for their users. We aim to develop within the students, a variety of skills and techniques including working safely, being able to follow instructions and the resilience to see a problem through to the end. Mathematics and Literacy are embedded into the Design and Technology courses and students are encouraged to write in detail about their designs and justify all decisions which are made. Numeracy tasks are incorporated into all modules and the ability to apply their knowledge to everyday problems will be invaluable to future employers.	
Implementation We want to develop independent learners, who are able to design and solve problems in a variety of material areas. They will be given the opportunity to complete a wide range of practical tasks which involve precision, dexterity and creativity. We will give students the opportunity to work on their own, as well as with others, while they investigate problems and learn from each other. Students will develop their skills to research, design, make and evaluate, in a variety of different material areas, whilst being encouraged to be inspired by others and follow an iterative process. They will develop their technical knowledge and make informed decisions which consider the impact on our planet and the users of their final products. We will provide appropriate structure to tasks, to enable all students to make excellent progress. Clear communication skills are important to us and students will develop a variety of ways in which to explain their thoughts. Students will be given home learning activities to promote supported self-study. Long term memory will be developed through retrieval practice and knowledge organisers.	
Impact A problem-solving approach to design, will enable students to think for themselves, become resourceful and take risks. Students will see how this curriculum links with many potential future careers and will hopefully inspire them to pursue their dreams in a creative or technological profession. Regular assessments at the start and end of modules will allow checks to be made on their progress. The practical outcomes which the students produce, will be assessed on the advances being made in their precision, creativity and understanding of processes and materials. Students will move into Year 9 as more confident designers and makers who have made good progress towards their end of Key Stage academic targets.	
Links to prior learning The Year 7&8 curriculum builds on the skills learned in KS2 D&T in areas such as designing functional, purposeful and appealing products for themselves and others. Students will extend their knowledge of materials, components and ingredients. They will have access to a far wider range of processes, tools and equipment. This will extend their ability to create more sophisticated and creative outcomes.	
Links to future learning The Year 7&8 Curriculum builds a foundation of knowledge, which directly relates to the key skills which are ongoing in the Key Stage Four courses. Students will develop key skills in research, designing, making and evaluating. Understanding of these skills will be further developed in the Year 9 curriculum, where learners will be encouraged to consider in more detail about their choice of materials and processes, required when making high quality products.	
Links to other subjects and the wider curriculum The development of strong technological vocabulary and the ability to discuss and reason their thoughts, will support language acquisition and extended writing skills. Mathematics is incorporated into every module and supports the process of making products which are strong, low cost, environmentally friendly and efficient in production. We will build on written skills and oracy through all schemes of work and encourage students to critically evaluate their own work and that of others. Links to Science and Humanities are widespread and would include topics such as sources of materials, environmental issues during manufacture and food provenance. Aspects of the PSHCE curriculum are also complemented in areas such as health and nutrition.	



3-10-25

Robot project			Home Learning
Knowledge Inputs, processes and outputs Electronic components Naming equipment Drawing circuits Calculating area, length Using flow charts Health & Safety precautions Skills Analysis Designing in 2D and 3D Make – cutting, shaping and drilling, soldering and assembling Product Analysis Modelling Learning content: Design and make a controller and robot for a game of table-football. - Analyse existing game controllers - Design a controller, create models, and develop their ideas for a small robot, which will push a golf ball around a table. - Cut and shape the materials, draw, and create circuits using push switches, motors, wires, terminal blocks and soldering. - Work safely and efficiently with a variety of tools and equipment. - Work in teams to test their robots during a game of table football.			Look at a range of electronic products at home and decide what their input and output components might be. Produce a flow chart to explain how to use a product, e.g. a toaster or kettle. Knowledge organiser
Assessment Assessments during and at end of the module. Booklet and product assessed. Quick low stakes testing at points during DO NOW tasks.			
Wider curriculum Numeracy, Science – circuits and components, Computing – flow charts, working in teams			
Literacy <i>Writing skills – analysis of products, explanation of designs</i>	Numeracy <i>Area and length</i>	British Values	Employability <i>Independent problem solving, health & safety rules</i>
SMSC <i>Environmental issues – using batteries and disposal of</i>	Cultural Capital	Character Education <i>Confidence in working independently on machines</i>	Personal Development <i>Persevering with a task from start to finish</i>



3-10-25

Money POD Project

Knowledge

Naming equipment
Health & Safety in the workshop
Polymer types and properties

Skills

Research

Analysis

Designing in 2D and 3D

Make – cutting, shaping and drilling,
press forming polymer sheet

Learning content:

Design and make a money box (POD) using polymers.

- Research existing products and show numeracy skills through measuring coins.
- Knowledge on polymers and their sources and how they impact on society.
- Draw in 3D and develop ideas into a working prototype.
- Health and safety issues when working with tools and machines.
- Use a wide range of equipment including scroll saws, sanding disc, pillar drill and strip heater, use the process of press-forming to mould the shape of their material into a 3D form.

Home Learning

Investigate topics which are discussed in class in further depth. In particular, the properties of materials and how their production, use and disposal can affect planet earth.

Practise drawing in isometric (3D) and adding good quality tonal shading with coloured pencils. Use the internet to look at other products, draw them in isometric.

Knowledge organiser

Assessment Assessments during and at end of the module. Booklet and product assessed.
Quick low stakes testing at points during DO NOW tasks.

Wider curriculum

Numeracy – see below, English - Descriptive writing skills are developed during annotation of design ideas.
Vocabulary expanded through use of technical language, Science- Thermoplastics and thermoset plastics, their properties and molecular bonds. Production of plastics from raw materials.

Literacy <i>Writing skills – describing ideas</i>	Numeracy <i>Area and length, percentages, fractions, tessellation</i>	British Values <i>Tolerance developed during peer feedback of design ideas</i>	Employability <i>Problems solving a design, listening to instructions carefully, teamwork skills during practical</i>
SMSC <i>Environmental issues – where plastics are sourced from Use of their imagination and creativity in their designing</i>	Cultural Capital	Character Education <i>Cooperating with others Supporting peers in the workshop</i>	Personal Development <i>Making informed choices to stay safe in the workshop environment.</i>



3-10-25

CAD/CAM			Home Learning
Knowledge Use of CAD & CAM Using 2D and 3D CAD software Use of computers in industry Skills Analysis Research Design Assembly of parts Learning content: Design and make a clock or phone/photo stand (laser cutter) • Use a range of tools in Techsoft Design software to create accurate 2D and 3D drawings. • Understand the difference between CAD and CAM and the advantages and disadvantages of using them both at school and in industry • Understand use of different line colours when cutting and engraving on the laser. • Demo using 3D printer.			Research a range of jobs that require skills in CAD or CAM. Look around your house for products which have been created by CAM. Identify what type of machine might have been used. Knowledge organiser
Assessment Assessments during and at end of the module. Booklet and design of product assessed. Quick low stakes testing at points during DO NOW tasks.			
Wider curriculum Numeracy, Science – circuits and components, Computing – flow charts			
Literacy <i>Writing skills – product analysis</i>	Numeracy <i>Tessellation, co-ordinates</i>	British Values	Employability <i>ICT skills – 2D/3D CAD</i>
SMSC <i>Environmental issues – efficient use of materials</i>	Cultural Capital	Character Education	Personal Development



3-10-25

Graphics – Smarties project			Home Learning
Knowledge Drawing of accurate Geometric forms. Isometric sketching and drawing. Drawing of surface developments Adding tonal and textured rendering to 3D shapes. Enlargement/Reduction Skills Analysis - use of ACCESSFM for example Designing in 2D and 3D Modelling in card Making – accuracy and precision in final outcome Learning content: Design and make packaging for Smarties. • Analysis of existing packaging designs. • Write a specification. • Produce 3D ideas that are innovative and creative. • Using card and surface developments to produce models and prototypes of design proposals. • Produce a high quality final prototype of a packaging design. • Learn to use CAD software to enhance designs.			Practise drawing in a variety of ways, such as: isometric (3D), enlargement drawings, adding good quality tonal shading, textures and highlighting using coloured pencils.
Assessment Assessments during and at end of the module. Booklet and product assessed. Quick low stakes testing at points during DO NOW tasks.			
Wider curriculum Maths – refer to numeracy section. English – refer to literacy section. Art – cross curricular theory links.			
Literacy <i>Writing skills, reading out loud from project booklet, participation in class discussion.</i> Keywords <i>Use of Frayer models</i>	Numeracy <i>Area and length, ratio, resolution/pixels.</i>	British Values	Employability <i>Independent problem solving.</i> <i>Group/peer discussion</i>
SMSC <i>Awareness of environmental issues e.g recycling.</i> <i>Interpretation of ideas from different view points.</i>	Cultural Capital	Character Education <i>Confidence in working independently on computers.</i> <i>Use of hand held studio equipment (H&S).</i>	Personal Development <i>Safety within the classroom.</i> <i>Ability to reason choices/apply justification.</i>



3-10-25

Food & Nutrition			Home Learning
Knowledge Healthy eating Classification of fruit and vegetables Nutrition Enzymic browning Food provenance Fairtrade Skills Food safety Food preparation and cooking Planning Making Evaluation Learning content: • Make informed decisions about their own diet and food choices. • Understanding the eat well guide • Practical making skills developed whilst producing a variety of predominantly savoury dishes. • Investigation into faults in cake making • Finishing techniques to be applied to different foods • Moral issues relating to free range v caged hens			Practice preparing food at home. Help out with meal times, preparing items such as vegetables by peeling and chopping. Follow recipes at home, to help develop independent cooking skills. Knowledge organiser
Assessment Assessments during and at end of the module. Booklet and product assessed. Quick low stakes testing at points during DO NOW tasks.			
Wider curriculum Numeracy - weighing ingredients, ratios, nutritional labelling, food miles. Science – Food investigation (faults in cake making), English – key words and descriptive language, Geography - food miles, sustainability, seasonability, carbon footprint			
Literacy <i>Writing skills</i> <i>Essay questions</i> <i>Key words – sensory properties, definitions</i> <i>Reading food labels to prepare healthy, nutritious meals</i>	Numeracy <i>Costing of ingredients</i> <i>Ratio of ingredients</i> <i>Weighing/measuring</i> <i>Calculating percentages</i> <i>Nutritional labels on food – healthy vs unhealthy</i>	<i>British Values</i> <i>Mutual respect – working in teams with students & listening to other's opinions with those with different faiths & for those without faith.</i> <i>Democratic society – choice of where and what ingredients to use</i>	<i>Employability</i> <i>Health & safety rules</i> <i>Independent problem solving</i> <i>Teamwork</i> <i>Working independently</i> <i>Problem solving</i> <i>Adaptability</i> <i>Organisation skills</i>
SMSC <i>Sustainability – Reusing last over food ingredients, reducing food packaging</i> <i>Moral issues – free range vs intensive farming</i> <i>Fairtrade – promote a sense of community & encourage respect for others & their work</i> <i>Food provenance – where does our food come from? Learning about themselves and the diets they follow to stay healthy</i>	Cultural Capital <i>Food provenance – where food comes from</i> <i>Sustainability - Reusing left over food ingredients, reducing food packaging</i> <i>Carbon footprint – gas emissions & the environment</i> <i>Climate change – seasonability</i>	Character Education <i>Confidence in working independently with food processes</i> <i>Self esteem</i> <i>Resilience & development</i> <i>Ability to take risks</i>	Personal Development <i>Ability to work independently and as a team</i> <i>Ability to Share</i> <i>Diligent</i>



3-10-25

Hand Puppet Heroes Project - Textiles			Home Learning
Knowledge Naming key equipment / techniques / stitch styles Calculating surface area, length and diameter Demonstrating application of techniques – hand and machine Health & Safety precautions Skills Analysis Designing in 2D Make – cutting, sewing (hand and machine), application of techniques Product Analysis Modelling – paper based Learning content: Students analyse existing hand puppets and their history before designing their own. They will create paper models to contribute to their iterative design process and produce 2D design drawings before they generate a fully functional hand puppet. Pupils will learn to cut and shape materials, prior to sewing and assembling the pieces. Various decorative techniques will be tried and tested before evidencing an appropriate variety on the final product. Pupils will learn to work safely and efficiently with a variety of tools and equipment, both hand and machine based.			Look further into the history of hand puppets. Discover and read more about the different case studies of companies who have sustainable initiatives in place. Broaden your textiles knowledge by having a go at the revision quizzes online to increase your subject awareness. Knowledge organiser
Assessment Assessments during and at end of the module. Booklet and product assessed. Quick low stakes testing at points during DO NOW tasks.			
Wider curriculum Maths – refer to numeracy section. English – refer to literacy section. PE – hand/eye coordination.			
Literacy Writing skills, reading out loud from project booklet, participation in class discussion, testing of keyword spellings.	Numeracy Surface area, length, diameter and millimetres	British Values Showing respect in design work. No reflection of insult/offence.	Employability Independent problem solving. Group/peer discussion.
SMSC Awareness of environmental issues, e.g. sustainability programmes Reflection on inspiration/aspiration and demonstration within practical design and outcome.	Cultural Capital	Character Education Confidence in working independently with machinery and hand tools (H&S). Use of iterative design.	Personal Development Safety within the classroom. Ability to reason choices/apply justification.



3-10-25

Graphics – Pop up card project			Home Learning
Knowledge Rendering skills Card mechanism construction— experimentation Writing a specification Creation of mood board Design idea creation Development of ideas Manufacture of pop-up card Skills Analysis Designing - in 2D and 3D. Modelling in card and experimenting with paper manipulation/techniques. Making – accuracy and precision in final outcome. Learning content: Design and make an original pop up card. • Analysis of existing designs • Write a specification. • Produce 3D and 2D ideas that are innovative and creative. • Using card and surface developments to produce models and prototypes of design proposals. • Produce a high quality final prototype of a pop up card			Practise drawing in a variety of ways, such as: isometric (3D), surface developments, adding good quality tonal shading, textures and highlighting using coloured pencils. Further experimentation with paper folding techniques – watching Youtube videos
Assessment Baseline test at the start and end of the module. Booklet and product assessed. All students will be assessed at least once per half term.			
Wider curriculum Maths – refer to numeracy section. English – refer to literacy section. Art – cross curricular theory links.			
Literacy <i>Writing skills, reading out loud from project booklet, participation in class discussion.</i> <i>Keywords</i> <i>Use of Frayer models</i>	Numeracy <i>Area and length.</i>	British Values <i>Mutual respect – working in teams with students & listening to other’s opinions with those with different faiths & for those without faith.</i>	Employability <i>Independent problem solving.</i> <i>Group/peer discussion</i>
SMSC <i>Awareness of environmental issues, e.g. recycling.</i> <i>Interpretation of ideas from different view points.</i> <i>Awareness of moral values and what is globally/nationally acceptable for use</i>	Cultural Capital	Character Education <i>Confidence in working independently on computers.</i> <i>Use of hand held studio equipment (H&S).</i>	Personal Development <i>Safety within the classroom.</i> <i>Ability to reason choices/apply justification.</i>