TECHNOLOGY – RESISTANT MATERIALS

Year 7

What are the aims and intentions of this curriculum?

The aim of our Key Stage 3 Curriculum is to allow pupils to explore their creativity using a range of materials, equipment and techniques. Pupils have the opportunity to design and make high quality products that respond to a wide variety of problems within a range of contexts. Resistant Materials specifically develops pupils design skills as well as their practical skills, focusing particularly on problem solving and evaluation skills.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Autumn 1	**THE PENCIL HOLDER PROJECT** EXPLORING IDEAS AND THE TASK GENERATING IDEAS	**Students will learn:** • The design process. • Situation and Design Brief. • Task Analysis • Writing specifications • Research and Analysis • Developing initial pencil holder Ideas 1 and 2 • Developing initial pencil holder ideas 3 and 4 • Peer design review • Modification of design • Final pencil holder design • CAD drawings/Final Design	**Students will develop:** An understanding that designing and making has aesthetic, environmental, technical, economic, ethical and social dimensions and impacts on the world. An understanding for the importance of the design process and the different stages all products must undergo during production. The skills needed to explore a given design brief, specifications, along with appropriate research to effectively analyse the task of creating a pencil holder for the required target market. An appreciation of existing products and solutions to inform their designing ideas. The skills needed to create suitable design ideas that meet the given specifications and suit the intended target market. An appreciation of constructive teacher and peer criticism to improve design ideas if necessary and then choose the most suitable final design.	Writing a suitable problem and design brief. Creating a mind map for task analysis Writing specifications and explaining the importance. Homework to research existing pencil holder designs. Drawing and colouring initial design ideas. Peer design review Drawing the final design.

	DEVELOPING AND MODELLING IDEAS PLANNING	3rd Angle Orthographic Projection (Working Drawing) • Cardboard Model • Gantt Chart • Wood working tools, equipment, materials • Wood working safety and risk assessments. • Steps of procedure for making the pencil holder or a flow chart sequence.	The skills needed to accurately navigate the CAD software to complete a working drawing or 3d model of their pencil holder. The skills required to generate a cardboard model of the pencil holder. A general understanding of the tools, equipment, materials, safety precautions, ppe and risk assessments that are essential to create the pencil holder. A knowledge for the sequence of operations to successfully create the pencil holder.	Using CAD software to produce a working drawing or 3d model. Production of cardboard model Design a flow chart sequence to highlight the procedure for making the pencil holder.
Autumn 2	MAKING HIGH QUALITY PRODUCTS EVALUATING	• Correct selection of wood working tools, equipment, materials and techniques. • Quality and accuracy used in making the pencil holder. • Ability to apply all health and safety rules • Produce a quality product that meets the design specification. • Show a developing ability to work independently. • Student appraisal of the finished product.	The knowledge needed to select the correct wood working tool, equipment and materials for each stage in the pencil holder production. The knowledge of working safely and demonstrate that they know how to work and be mindful of other students in the laboratory. An appreciation for accurately reflecting on the finished product. They will also learn why product evaluation and testing is an important stage in the design process and how it helps to put suitable products on the market.	Written pencil holder evaluation or review.

Spring 1	**THE ANALOGUE CLOCK PROJECT** EXPLORING IDEAS AND THE TASK	**Students will learn:** • The design process. • Situation and Design Brief. • Task Analysis • Writing specifications • Research and Analysis	**Students will develop:** An understanding that designing and making has aesthetic, environmental, technical, economic, ethical and social dimensions and impacts on the world. An understanding for the importance of the design process and the different stages all products must undergo during production. **(This was taught in the previous project therefore; the teacher will quickly reinforce this by linking the design process to the new project).**	Writing a suitable problem and design brief. Creating a mind map for task analysis Writing specifications and explaining the importance. Homework to research existing simple analogue clock designs.
	GENERATING IDEAS	• Developing initial analogue clock Ideas 1 and 2 • Developing initial clock ideas 3 and 4 • Peer design review • Modification of design • Final analogue clock design	The skills needed to explore a given design brief, specifications, along with appropriate research to effectively analyse the task of creating a simple analogue clock for the required target market. An appreciation of existing products and solutions to inform their designing ideas. The skills needed to create suitable design ideas that meet the given specifications and suit the intended target market.	Drawing and colouring initial design ideas. Peer design review Drawing the final design.
	DEVELOPING AND MODELLING IDEAS	• CAD drawings/Final Design 3rd Angle Orthographic Projection (Working Drawing) • Cardboard Model • Gantt Chart	An appreciation of constructive teacher and peer criticism to improve design ideas if necessary and then choose the most suitable final design. The skills needed to accurately navigate the CAD software to complete a working drawing or 3d model of their analogue clock.	Using CAD software to produce a working drawing or 3d model. Production of cardboard model
	PLANNING	• plastic working tools, equipment, materials	The skills required to generate a cardboard model of the clock.	Design a flow chard sequence to highlight the procedure for making the clock.

		• plastic working safety and risk assessments. • Steps of procedure for making the analogue clock or a flow chart sequence.	A general understanding of the tools, equipment, materials, safety precautions, ppe and risk assessments that are essential to create the analogue clock. A knowledge for the sequence of operations to successfully create the analogue clock.	
Spring 2	MAKING HIGH QUALITY PRODUCTS EVALUATING	• Correct selection of plastic working tools, equipment, materials and techniques. • Quality and accuracy used in making the clock. • Ability to apply all health and safety rules • Produce a quality product that meets the design specification. • Show a developing ability to work independently. Student appraisal of the finished product.	The knowledge needed to select the correct plastic working tools, equipment and materials for each stage in the clock production. The knowledge of working safely and demonstrate that they know how to work and be mindful of other students in the laboratory. An appreciation for accurately reflecting on the finished product. They will also learn why product evaluation and testing is an important stage in the design process and how it helps to put suitable products on the market.	Written analogue clock evaluation or review.
Summer 1	**Night Light Project**	**Students will learn:** • The design process. • Situation and Design Brief. • Task Analysis • Writing specifications • Research and Analysis	**Students will develop:** An understanding that designing and making has aesthetic, environmental, technical, economic, ethical and social dimensions and impacts on the world. An understanding for the importance of the design process and the different stages all products must undergo during production. **(This was taught in the previous project therefore; the teacher will quickly reinforce**	Writing a suitable problem and design brief. Creating a mind map for task analysis Writing specifications and explaining the importance.

			this by linking the design process to the new project).	Homework to research existing products on the market.
		• Developing initial deas 1 and 2 • Developing initial 3 and 4 • Peer design review • Modification of design • Final design	The skills needed to explore a given design brief, specifications, along with appropriate research to effectively analyse the task of creating night lights An appreciation of existing products and solutions to inform their designing ideas. The skills needed to create suitable design ideas that meet the given specifications and suit the intended target market. An appreciation of constructive teacher and peer criticism to improve design ideas if necessary and then choose the most suitable final design.	Drawing and colouring initial design ideas. Peer design review Drawing the final design.
		• CAD drawings/Final Design • 2D Design Software, Vinyl cutter and Heat Press use.	The skills needed to accurately navigate the CAD software to complete designs. A general understanding of the equipment used in manufacturing night light circuits. A knowledge for the sequence of operations to successfully create a fully working night light circuit and holder designs.	Using CAD software to produce designs.