Design Technology

Teachers: Neil O'Donnell

Design and Technology is an exciting, varied and rewarding subject that aims to develop creativity, designing and making skills using traditional and modern techniques, teamwork, perseverance, independence and problem solving. We aim to keep up with advances in science, engineering and technology so the projects are continually updated. Through a rotational Key Stage 3 curriculum, pupils enjoy the experience of a range of technology disciplines and support pupil's skills and development with exciting projects and a hands on teaching approach. In Key Stage 4 pupils can opt to study Food Technology.

Schemes of work

Year 7

Autumn		Spring		Summer	
Design Skills		**Blockbot Toy**		**Tea Light Holder**	
As part of the transition process the first term of Design and Technology in year 7 is taught in our Rowan building. Pupils undertake a series of graphic based projects to build design skills.		Pupils create a wooden robot shaped toy. This project focuses on key basic skills such as health and safety, accurate and precise measuring, sequencing of stages in making a product and the use of specialist tools and machinery.		Pupils create a decorative tea light holder. This project focuses on building the skills of CAD/CAM and their use of specialist tools and equipment.	
Learning Objectives	**Key Skills and Knowledge**	**Learning Objectives**	**Key Skills and Knowledge**	**Learning Objectives**	**Key Skills and Knowledge**

Pupils will:
• Investigate art and design movements.
• Understand how branding is used in advertising.
• Research existing products to identify and understand target markets.
• Use colour theory to inform design decisions.
• Develop and communicate design ideas.
• Design a logo and create a packaging product.
• Use the key features of 2D design.
	• Understand the key characteristics and styles of art and design movements.
	• Research logos and branding, what makes a recognisable brand.
	• Evaluate a range of existing products, how different products appeal to different users.
	• Generate, develop, communicate and model their ideas through talking, drawing, templates and, where appropriate, ICT.
	• Use mathematical nets of 3D shapes.
		Pupils will:
		• Understand why health and safety is important in the design and technology classroom and workshop.
		• Research existing products to identify and understand target markets.
		• Develop and communicate design ideas.
		• Be able to measure accurately.
		• Understand how to create a cutting list to minimise wastage.
		• Sequence stages of making.
		• Use specialist tools and equipment safely and correctly
		  ○ Hand tools
		  ○ Belt Sander
			• Identify health and safety signs, and hazards and risks in the design and technology environment.
			• Identify tools and equipment.
			• Be able to use measurements such as millimetres, centimetres and metres, using rulers and measuring equipment.
			• Be able to understand stock measurements and a cut list.
			• Understand circumferences, diameters and radius, use a compass to create circles using measurements.
				Pupils will:
				• Identify risks and hazards when working with specialist tools and machinery.
				• Research existing products to identify and understand target markets.
				• Develop and communicate design ideas.
				• Be able to work to scale and measurements in CAD.
				• Sequence stages of making.
				• Use specialist tools and equipment safely and correctly
				  ○ Hand tools
				  ○ Belt Sander
				  ○ Pillar Drill
					• Identify health and safety signs, and hazards and risks in the design and technology environment.
					• Identify tools and equipment.
					• Be able to use measurements such as millimetres, centimetres and metres, using rulers and measuring equipment.
					• Be able to understand stock measurements and a cut list.
					• Understand circumferences, diameters and radius, use a compass to create circles using measurements.
					• Evaluate a range of existing products, discussing target markets.

	• Make purposeful, functional and appealing products for a target market. • Select and use specialist tools, equipment and materials.	○ Pillar Drill • Using a range of techniques to add a decorative finish.	• Evaluate a range of existing products, discussing target markets. • Generate, develop, communicate and model their ideas through talking, drawing, templates and, where appropriate, ICT. • Be able to plan the stages of making through sequencing, this is done first because… etc • Use a range of tools and equipment to make a finished product. • Use a range of techniques such as CAD/CAM to apply a design	• Using a range of techniques to add a decorative finish.	• Generate, develop, communicate and model their ideas through talking, drawing, templates and, where appropriate, ICT. • Evaluate a range of existing products, discussing target markets. • Understand how to work to measurements in CAD. • Create and test a prototype. • Be able to plan the stages of making through sequencing, this is done first because… etc • Use CAD to design a finished product and CAM to manufacture parts of a final product. • Use a range of tools and equipment to make a finished product. • Make a purposeful, functional and appealing product for a target market.

Year 8

Autumn		Spring		Summer	
Monster Plush		**Phone/Device Stand**		**Bird Box**	
Pupils create a monster themed plush toy. This project focuses on textiles skills		Pupils create a phone/device stand. This project focuses on building on skills such as health and safety, accurate and precise measuring, sequencing of stages in making a product and the use of specialist tools and machinery.		Pupils create a decorative tea light holder. This project focuses on building the skills of CAD/CAM and their use of specialist tools and equipment.	
Learning Objectives	**Key Skills and Knowledge**	**Learning Objectives**	**Key Skills and Knowledge**	**Learning Objectives**	**Key Skills and Knowledge**
Pupils will: • Understand why health and safety is important in the design and technology classroom and workshop. • Develop basic embroidery and decorative stitches. • Develop applique and button techniques. • Research existing products to identify and understand target markets. • Develop and communicate design ideas. • Be able to measure textiles accurately factoring in seam allowances.	• Investigate textiles designers such as Jennifer Strunge. • Evaluate a range of existing products, how different products appeal to different users. • Generate, develop, communicate and model their ideas through talking, drawing, templates and, where appropriate, ICT. • Create a mathematical template/pattern. • Understand seam allowances and wastage.	Pupils will: • Understand why health and safety is important in the design and technology classroom and workshop. • Research existing products to identify and understand target markets. • Develop and communicate design ideas. • Be able to measure accurately on CAD. • Sequence stages of making. • Use specialist tools and equipment safely and correctly ○ CAD ○ Laser cutter	• Identify health and safety signs, and mitigate hazards and risks in the design and technology environment. • Identify and select tools and equipment. • Evaluate a range of existing products, discussing target markets. • Generate, develop, communicate and model their ideas through talking, drawing, templates and, where appropriate, ICT.	Pupils will: • Identify risks and hazards when working with specialist tools and machinery. • Research existing products to identify and understand target markets. • Develop and communicate design ideas. • Be able to work to scale and measurements in CAD. • Sequence stages of making. • Use specialist tools and equipment safely and correctly ○ Hand tools ○ Belt Sander ○ Scroll Saw	• Identify health and safety signs, and mitigate hazards and risks in the design and technology environment. • Identify and select tools and equipment. • Evaluate a range of existing products, discussing target markets. • Generate, develop, communicate and model their ideas through talking, drawing, templates and, where appropriate, ICT. • Be able to work to a cutting list and understand wastage.

• Be able to create a cutting list to minimise wastage.
• Sequence stages of making.
• Use specialist tools and equipment safely and correctly
  • Textiles shears
  • Needle and pins
	• Develop a range of basic stitches such as running and back stitches.
	• Demonstrate a range of decorative embroidery stitches such as blanket, cross, chain etc.
	• Make purposeful, functional and appealing products for a target market.
	• Select and use specialist tools, equipment and materials.
		○ Line Bender
		• Using a range of techniques to add a decorative finish.
			• Be able to use measurements such as millimetres, centimetres using CAD.
			• Understand circumferences, diameters and radius, using CAD.
			• Be able to minimise wastage when using CAM.
			• Be able to plan the stages of making through sequencing, this is done first because… etc
			• Use a range of tools and equipment to make a finished product.
			• Use a range of techniques such as CAD/CAM to apply and manufacture a design.
			• Understand how this product can be a One off, batch or mass production.
				○ Pillar Drill
				• Using a range of techniques to add a decorative finish.
					• Be able to use measurements such as millimetres, centimetres and metres, using rulers and measuring equipment.
					• Be able to understand stock measurements and a cut list.
					• Understand circumferences, diameters and radius, and how to place and cut into material with appropriate equipment.
					• Be able to plan the stages of making through sequencing, this is done first because… etc
					• Use a range of tools and equipment to make a finished product.
					• Make a purposeful, functional and appealing product for a target market.

Year 9

Autumn		Spring		Summer	
Pencil case/Keepsake box		**Headphone/Gaming Stand**		**Art Movement inspired Desk Lamp**	
Pupils create a wooden pencil case or wooden keepsake box. This project focuses on building on skills such as health and safety, CAD/CAM, accurate and precise measuring, sequencing of stages in making a product and the use of specialist tools and machinery.		Pupils create a phone/device stand. This project focuses on basic electronic and soldering skills, building CAD/CAM skills combining materials, sequencing of stages in making a product and the use of specialist tools and machinery.		Pupils create a decorative desk lamp inspired by an art movement This project focuses on building electronic and soldering skills, building CAD/CAM skills, combining materials, sequencing of stages in making a product and the use of specialist tools and machinery.	
Learning Objectives	**Key Skills and Knowledge**	**Learning Objectives**	**Key Skills and Knowledge**	**Learning Objectives**	**Key Skills and Knowledge**

Pupils will:
• Identify risks and hazards when working with specialist tools and machinery.
• Research existing products to identify and understand target markets.
• Develop and communicate design ideas.
• Be able to work to scale and measurements in CAD.
• Sequence stages of making.
• Use specialist tools and equipment safely and correctly
  • Hand tools
  • Belt Sander
  • Scroll Saw
  • Pillar Drill
  • Laser cutter
• Using a range of techniques to add a decorative finish.
	• Identify health and safety signs, and mitigate hazards and risks in the design and technology environment.
	• Identify and select tools and equipment.
	• Evaluate a range of existing products, discussing target markets.
	• Generate, develop, communicate and model their ideas through talking, drawing, templates and, where appropriate, ICT.
	• Be able to work to a cutting list and understand wastage.
	• Be able to use measurements such as millimetres, centimetres and metres, using CAD, rulers and measuring equipment.
		Pupils will:
		• Understand why health and safety is important in the design and technology classroom and workshop.
		• Be able to create and explain a simple series and parallel circuit.
		• Demonstrate how to solder safely and effectively.
		• Demonstrate how to populate a PCB with the correct components.
		• Research existing products to identify and understand target markets.
		• Develop and communicate design ideas.
		• Sequence stages of making.
		• Select and use specialist tools and equipment safely and correctly.
			• Identify health and safety signs, and mitigate hazards and risks in the design and technology environment.
			• Identify and select tools and equipment.
			• Know the difference between a series and parallel circuit.
			• Be able to identify and describe components and draw a simple circuit diagram.
			• Demonstrate how to solder including tinning the tip and creating an electrical joint.
			• Be able to identify soldering equipment and understand the health and safety risks.
				Pupils will:
				• Understand why health and safety is important in the design and technology classroom and workshop.
				• Research the key features of a range of Art and Design movements.
				• Demonstrate how to solder safely and effectively.
				• Demonstrate how to populate a PCB with the correct components.
				• Research existing products to identify and understand target markets.
				• Develop and communicate design ideas.
				• Sequence stages of making.
				• Select and use specialist tools and equipment safely and correctly.
					• Identify health and safety signs, and mitigate hazards and risks in the design and technology environment.
					• Identify and select tools and equipment.
					• Know the difference between a series and parallel circuit.
					• Be able to identify and describe components and draw a simple circuit diagram.
					• Demonstrate how to solder including tinning the tip and creating an electrical joint.
					• Be able to identify soldering equipment and understand the health and safety risks.

	• Be able to understand stock measurements and a cut list.
	• Understand circumferences, diameters and radius, and how to place and cut into material with appropriate equipment.
	• Be able to plan the stages of making through sequencing, this is done first because… etc
	• Use a range of tools and equipment to make a finished product.
	• Make a purposeful, functional and appealing product for a target market.
		• Be able to measure accurately on CAD.
		• Sequence stages of making.
		• Use specialist tools and equipment safely and correctly
		  ○ CAD
		  ○ Laser cutter
		  ○ Line Bender
		• Using a range of techniques to add a decorative finish.
			• Be able to troubleshoot and problem solve a soldered circuit.
			• Evaluate a range of existing products, discussing target markets.
			• Generate, develop, communicate and model their ideas through talking, drawing, templates and, where appropriate, ICT.
			• Be able to plan the stages of making through sequencing, this is done first because… etc
			• Make purposeful, functional and appealing products for a target market.
			• Be able to use measurements such as millimetres, centimetres using CAD.
			• Understand circumferences, diameters and radius, using CAD.
			• Be able to minimise wastage when using CAM.
			• Be able to plan the stages of making through sequencing, this is done first because… etc
			• Use a range of tools and equipment to make a finished product.
			• Use a range of techniques such as CAD/CAM to apply and manufacture a design.
			• Understand how this product can be a One off, batch or mass production.
				• Be able to measure accurately on CAD.
				• Sequence stages of making.
				• Use specialist tools and equipment safely and correctly
				  ○ CAD
				  ○ Laser cutter
				  ○ Line Bender
				• Using a range of techniques to add a decorative finish.
					• Be able to troubleshoot and problem solve a soldered circuit.
					• Be able to adapt a PCB and wiring to fit their chosen design.
					• Evaluate a range of existing products, discussing target markets.
					• Generate, develop, communicate and model their ideas through talking, drawing, templates and, where appropriate, ICT.
					• Be able to plan the stages of making through sequencing, this is done first because… etc
					• Make purposeful, functional and appealing products for a target market.
					• Be able to use measurements such as millimetres, centimetres using CAD.
					• Understand circumferences, diameters and radius, using CAD.
					• Be able to minimise wastage when using CAM.
					• Be able to plan the stages of making through sequencing, this is done first because… etc
					• Use a range of tools and equipment to make a finished product.
					• Use a range of techniques such as CAD/CAM to apply and manufacture a design.
					• Understand how this product can be a One off, batch or mass production.