Technology

The Ripley Academy

Curriculum Intent Overview

At Ripley Academy Design Technology curriculum provides a rich, challenging, enjoyable and enhancing programme of learning. It is a contemporary and varied curriculum which enables pupils to participate in tomorrow's rapidly changing technologies. Pupils combine practical skills with an understanding of aesthetics, social and environmental issues, function and industrial practices. Pupils learn to design and make products that solve genuine, relevant problems within different contexts, whilst considering their own and others' needs, wants and values. For example across Key Stage 3 pupils design and make a mechanism for a sweet dispenser, cultural products based on the Mexican theme of Day of the Dead, a gadget tidy, lighting based on a design movement, a mini speaker and design a product influence by a current designer. In Key Stage 4 pupils can choose either GCSE DT or Arts, Crafts and Design (focusing on 3D, textile and graphics) and complete further projects based around lighting, jewellery, architecture, outdoor living and sculpture.

Through a variety of creative and practical activities, we teach the knowledge, understanding and skills needed to engage in an iterative process of designing, making and evaluating. When designing, pupils will use their research to generate creative design ideas that are communicated clearly using annotated sketches and accurate technical working drawings. When making, pupils work with a wide range of materials and techniques both traditional and contemporary. They use their understanding to carefully select the tools, processes and manufacturing techniques needed to create their design. This also includes CAD and a range of CAM methods such as 3D Printing, LASER cutting, and vinyl cutting.

The subject includes the practical application of mathematical and scientific concepts combined with practical skills, and an understanding of aesthetic, social and environmental issues, linked together with industrial practices. Through the evaluation of: their own work; past and present designers; and the work of others; our pupils develop a critical understanding of its impact on daily life and the wider world. Design Technology at Ripley Academy will enable pupils to become a discriminating and informed consumers and promising innovators.

GCSE Design and Technology is broken down into an exam and coursework (Non-Exam Assessment / NEA). Each is worth 50% of the final grade.

GCSE Arts, Craft and Design is broken down into an exam and coursework (Non-Exam Assessment / NEA). The NEA is 60% and the exam is 40%. The exam is a 10 hour practical exam, over 2 school days.

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Year 7

Unit Title	Unit Overview	Prior Knowledge / skills	New Learning
Introduction to Materials	You will explore different mechanisms with Lego and design and make a product with a mechanism for a sweet dispenser.	NC KS2 - Generating, developing, modelling and communicating ideas. NC KS2 - Practical skills and techniques. NC KS2 - Evaluating own ideas and products. NC KS2 - Making products work	You will learn about different manufacturing techniques from traditional hand tools to modern process using CADCAM; which will include using CAD software called 2D Design, to draw and design, and CAM hardware called the laser cutter, to manufacture products. You will also learn about different materials (Pine, MDF and Plywood) and different mechanisms (Drop cams, leavers and linkages). If you want to look at these topics before the lesson BBC Bitesize and Technology Student both have information on the following topics; Isometric drawing, CAD and CAD modelling, product analysis, designers (other than Charles Rennie Mackintosh), materials, evaluating, mechanisms, material finishes and generating design ideas. In addition to these websites we use the following books too CGP GCSE AQA Design and Technology book (which is blue) and the PG Online AQA GCSE (9-1) Design and Technology Book.
Introduction to Materials	During this project you are required to design and manufacture a soft toy that is inspired by the Day of the Dead festival. The toy should be suitable to	NC KS2 - Generating, developing, modelling and communicating ideas. NC KS2 - Practical skills and techniques.	-Analysing and evaluating existing products -High level design skills using through drawing and annotation -Hand embroidery skills -Sewing machine operation and manufacturing skills. -Properties of materials (felt, wool, polyester)

	be sold in Build a Bear as part of their Cultural Celebration range. You will research the Day of the Dead festival and use this research to inspire your final product. You will learn about different decorative techniques such as embroidery sewing, applique and attaching buttons and sequins. You will become familiar with the sewing machine and how to operate it safely and independently.	NC KS2 - Evaluating own ideas and products. NC KS2 - Making products work	-Decorative techniques (applique, buttons sequins) -Accuracy and using templates -Cutting, pinning and marking out -Evaluating and reflecting on practical skills

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Year 8

Unit Title	Unit Overview	Prior Knowledge / skills	New Learning
Design and make a gadget tidy.	During this project you will research the design and make a gadget tidy to help a student become more organised at home, keeping their items safe.	Understanding contexts, users and purposes Exploring existing products Generating, developing, modelling and communicating ideas. Practical skills and techniques. Making products work. Evaluating own ideas and products.	You will need to understand how to assemble your product using different assembly methods. The design will need to combine wood and plastic, and must be able to hold one or more electronic product (phone, watch and/or head phones). If you want to look at these topics before the lesson BBC Bitesize and Technology Student both have information on the following topics; Isometric drawing, CAD and CAD modelling, product analysis, designers, materials, joining methods, evaluating, material finishes, generating design ideas and using microcontrollers. In addition to these websites we use the following books too, CGP GCSE AQA Design and Technology book (which is blue) and the PG Online AQA GCSE (9-1) Design and Technology Book.
Design movement inspired lamps.	During this project you are required to design and manufacture a lamp that has been inspired by Pop Art.	Understanding contexts, users and purposes Exploring existing products Generating, developing, modelling and communicating ideas. Practical skills and techniques. Making products work. Evaluating own ideas and products.	You will learn how to operate the sewing machine independently, setting it up and sewing using technical skills. ***Key skills that you will learn:*** -Abstract design skills

	You will research the Pop Art design period and use this research to inspire your final product. During this project you will also work in the DT workshop where you will be soldering the electronic circuit for the light source and manufacturing the lampstand.		-Using fabric paints skilfully -Sewing machine operation and technical manufacturing skills. -Isometric drawing skills -Electronic components and soldering -Using hand tools to cut out and finish the lamp stand. -Cutting, ironing and marking out with accuracy -Evaluating and reflecting on practical skills

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Year 9

Unit Title	Unit Overview	Prior Knowledge / skills	New Learning
Electronics	During this project you will discover the origins of timber and timber based products and how these products are mass produced. You will also make a speaker and learn how this type of product works and how they are assembled.	Understanding contexts, users and purposes Exploring existing products Generating, developing, modelling and communicating ideas. Practical skills and techniques. Making products work. Evaluating own ideas and products.	You will learn about different manufacturing techniques from soldering to CNC routers, plus other modern process using CADCAM; which will include using CAD software called TechSoft Design, to draw and manufacture the speaker case using the laser cutter and you will use SketchUp to produce a 3D CAD visual of the speaker case. You will also learn about different materials and components, including plywood, resistors, capacitors, 8 pin chip and LEDs. If you want to look at these topics before the lesson BBC Bitesize and Technology Student both have information on the following topics; electronic systems, work of other designers and companies, manufacturing techniques, origins of materials and inclusive design. In addition to these websites we use the following books too CGP GCSE AQA Design and Technology book (which is blue) and the PG Online AQA GCSE (9-1) Design and Technology Book.
Work of Others	During this project you are required to design and repeat pattern that is inspired by the print designer, Yinka Ilori. The pattern will be created using CAD and printed onto fabric. You will	Understanding contexts, users and purposes Exploring existing products	***Key skills that you will learn:*** -Analysing and evaluating existing products -High level design skills using through drawing and annotation -Hand embroidery skills

	use your bespoke printed fabric along with advanced sewing machine skills to produce a soft phone stand. You will also be spending time in the DT workshop designing and manufacturing a scaled down Yinka Ilori inspired chair. You will be learning about different practical techniques such as using hand tools, laser cutting, decorative techniques and finishes.	Generating, developing, modelling and communicating ideas. Practical skills and techniques. Making products work. Evaluating own ideas and products.	-Sewing machine operation and manufacturing skills. -Properties of materials (felt, wool, polyester) -Decorative techniques (applique, buttons sequins) -Accuracy and using templates -Cutting, pinning and marking out -Evaluating and reflecting on practical skills

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KS4 Courses Overview

Design and Technology

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Year 10

Unit Title	Unit Overview	Prior Knowledge / skills	New Learning
Practical Skills	Students will develop their practical skills by a lamp.	Generating, developing, modelling and Practical skills and techniques. Making products work.	Learning covered during this practical project are; Developing practical skills gained at KS3. Looking at how to make a quality product by hand. Using orthographic drawings and develop 2D and 3D CAD skills.
Modelling and Developing Protypes	Students will research an influential designer and design and make a piece of architecture using CADCAM.	Generating, developing, modelling and Practical skills and techniques. Making products work. Evaluating own ideas and products.	Learning covered during this practical project are; Exploring other designs. 3D hand drawing skills. 2D and 3D CAD skills. Developing modelling skills using card. Using the laser cutter to make complex items.
Mini NEA	Students will complete a practical NEA in preparation for the final NEA which starts in June in year 10.	Understanding contexts, users and purposes Exploring existing products Generating, developing, modelling and communicating ideas. Practical skills and techniques. Making products work. Evaluating own ideas and products.	

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NEA – Non-Exam Assessment	This is the beginning of the NEA for the Design and Technology GCSE. This is started in June in Y10 and completed in Y11. The context of the NEA is shared on the 1st June. Starts will start by understanding the context, identifying problems and understanding the users needs and wants.	Understanding contexts, users and purposes Exploring existing products Generating, developing, modelling and communicating ideas. Practical skills and techniques. Making products work. Evaluating own ideas and products.	

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Year 11

Unit Title	Unit Overview	Prior Knowledge / skills
NEA – Non-Exam Assessment	Continuing from year 10 students will create a design brief and specification and develop a range of designs. These will be development and reviewed in preparation for there final prototype.	Understanding contexts, users and purposes Exploring existing products Generating, developing, modelling and communicating ideas. Practical skills and techniques. Making products work. Evaluating own ideas and products.
Exam Preparation	Exam preparation will restart after the completion of the NEA. The exam is 50% of the final marks awarded. All the content cover in Y10 with be revisited.	Understanding contexts, users and purposes Exploring existing products Generating, developing, modelling and communicating ideas. Practical skills and techniques. Making products work. Evaluating own ideas and products.