

Design and Technology

Route Planner

Introduction to Curriculum Route Planners

Route Planners outline the Key Stages 1-3 curriculum to be taught within each campus of the Bury St Edmunds All-Through Trust. Each Route Planner has been designed to take into account both the new Primary Curriculum and the new GCSE specifications so that pupils' learning progresses seamlessly from ages 4 to 16 and prepares them thoroughly for the modern world and for the values which are fundamental to life in modern Britain.

Route Planners have been created for all core and foundation subjects. They have been written by Curriculum Development Teams, comprising subject leaders from each Trust campus.

The purposes of the Route Planner are to ensure coherence of curriculum across the Trust, to provide a framework for subject leaders to develop Schemes of Work, and to provide parents with information on what children will learn during each year of their education.

Key Stage One

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

	<i>Objectives Students will:</i>	<i>Key questions and potential learning activities/resources:</i>
Design	<ul style="list-style-type: none"> design purposeful, functional, appealing products for themselves and other users based on design criteria generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. 	<ul style="list-style-type: none"> <i>How do we do this?</i>
Make	<ul style="list-style-type: none"> select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. 	<ul style="list-style-type: none"> Click construction materials together: use stapler, hole punch, glue, sticky tape, split pins, lolly sticks, pipe cleaners, mobilo, lego, construction straws, junk, paper, card, fabric.
Evaluate	<ul style="list-style-type: none"> explore and evaluate a range of existing products. evaluate their ideas and products against design criteria. 	<ul style="list-style-type: none"> Adapt work
Technical Knowledge	<ul style="list-style-type: none"> build structures, exploring how they can be made stronger, stiffer and more stable. explore and use mechanisms [for example, levers, sliders, wheels and axles] in their products. 	

Cooking &
Nutrition

- use the basic principles of a healthy and varied diet to prepare dishes.
- understand where food comes from.

Key Stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

	<i>Objectives Students will:</i>	<i>Key questions and potential learning activities</i>
Design	<ul style="list-style-type: none"> • use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups • generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design 	<ul style="list-style-type: none"> • <i>How do we do this?</i> • Key Fob : A personal key fob made from acrylic. • Yo Yo Hanging Toy : Pupils make a large Yo Yo designed using 160mm² paper templates. • Jigsaw : Computers are used to create a suitable picture which is then printed on card and laminated. • Steady Hand Game : The backdrop is designed, in a similar way to the jigsaw project, and holds the L.E.D. in a suitable position
Make	<ul style="list-style-type: none"> • select from and use a wider range of tools and equipment to 	<ul style="list-style-type: none"> • Hand filing and polishing, shape forming.

	<p>perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <ul style="list-style-type: none"> • select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities 	<ul style="list-style-type: none"> • Acrylic finishing and molding • Marking, measuring, cutting & drilling wood to aid the formation of frames and boxes • Basic soldering techniques
Evaluate	<ul style="list-style-type: none"> • investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • understand how key events and individuals in design and technology have helped shape the world 	
Technical knowledge	<ul style="list-style-type: none"> • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • apply their understanding of computing to program, monitor and control their products 	
Cooking & Nutrition	<ul style="list-style-type: none"> • understand and apply the principles of a healthy and varied diet • prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques • understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed 	<ul style="list-style-type: none"> • Health, Hygiene & Safety : Introduction to the food studies room and the safe working practices they should adopt. • Through simple recipes, pupils are taught basic food skills. - Tea & Toast, Fruit Salad, Vegetable Soup, Muesli, Omelettes, Bangers & Mash.

- The Versatile Potato : Modern potato products and how they are used today: potato/fish cakes, jacket potato, modern potato products, potato & cheese bake, pink potato soup, Lord Woolton’s Pie.
- (*History Link & WW2 and how and why people were rationed.*)

Key Stage 3

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of domestic and local contexts [for example, the home, health, leisure and culture] and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion].

	<i>Objectives</i> <i>Students will:</i>	<i>Key questions and potential learning activities</i>
Design	<ul style="list-style-type: none"> • use research and exploration, such as the study of different cultures, to identify and understand user needs • identify and solve their own design problems and understand how to reformulate problems given to them • develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations • use a variety of approaches [for example, biomimicry and user-centred design] to generate creative ideas and avoid 	<ul style="list-style-type: none"> • <i>How do we do this?</i> • Light sensor circuit: This is complex electronic circuit built on strip board. Pupils also look at some of the simple components in the circuit and their operation. • Electric car: Pupils look at Motion and the various types. They use models to recreate and change motion. Their final product is a small car, powered

	<ul style="list-style-type: none"> stereotypical responses develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations 	<p>by a 3V electric motor. Pupils use the decorative pictures images to create elaborate bodywork.</p> <ul style="list-style-type: none"> Electronic egg timer: quite a complex 555 timer circuit, built and calibrated by pupils. It is operated with a simple rocker switch fed from a 9v battery. The circuit is housed in an M.D.F. box having an acrylic top and bottom and decorated sides.
Make	<ul style="list-style-type: none"> select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties 	<ul style="list-style-type: none"> Precision soldering for complex circuits and diagnostic testing. Precision marking, measuring, cutting & drilling wood.
Evaluate	<ul style="list-style-type: none"> analyse the work of past and present professionals and others to develop and broaden their understanding investigate new and emerging technologies test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists 	
Technical knowledge	<ul style="list-style-type: none"> understand and use the properties of materials and the performance of structural elements to achieve functioning 	

	<p>solutions</p> <ul style="list-style-type: none"> • understand how more advanced mechanical systems used in their products enable changes in movement and force • understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs] • apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors] and control outputs [for example, actuators] using programmable components [for example, microcontrollers] 	
<p>Cooking & Nutrition</p>	<ul style="list-style-type: none"> • understand and apply the principles of nutrition and health • cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet • become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes] • understand the source, seasonality and characteristics of a broad range of ingredients 	<ul style="list-style-type: none"> • Staple Foods 1 & 2 – a 12 week project that looks at staple foods from around the world: popcorn, egg fried rice, tuna pasta salad, pancakes, pizza, stir fry. • World Foods - this takes basic recipes from around the world and allows pupils to design and develop them. Their final recipe is recorded on I.T. and a recipe book is produced at the end of the 12 weeks.