Hope SENTAMU LEARNING TRUST

GEORGE PINDAR SCHOOL

Curriculum Progression Pathway for DT

Subject Intent:

To develop design and technology capability by:-

- developing the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- building and applying a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook

Why is the study of DT important?

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, students design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. Students acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Students learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

What skills will the study of DT teach you?

Developing the skills the students have learned at KS1 and KS2 in order that students are able to:

Designing

- uses 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
- develop and communicate design ideas using annotated sketches, detailed plans, 3-D and modelling, oral and digital presentations and computer-based tools

Making
- select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture
- select from and use a wide range of materials, components and ingredients, taking into account their properties

Evaluating
- 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 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

Cooking and Nutrition
- cook and apply the principles of nutrition and healthy eating
- cook a repertoire of predominantly savoury dishes so that students 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

What will you know and understand from your study of DT?

- understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists
- understand and use the properties of materials and the performance of structural elements to achieve functioning solutions

- understand how mechanical systems can be used to enable changes in movement and force
- understand how electrical and electronic systems can be powered and used
- understand and apply the principles of nutrition and health
- understand the source, seasonality and characteristics of a broad range of ingredients

All to allow students to be able to access the range of technological apprenticeships and post 16 educational opportunities in the area.

How does your study of DT support your learning in other subjects?

"Design and technology is a phenomenally important subject. Logical, creative and practical, it's the only opportunity students have to apply what they learn in maths and science - directly preparing them for a career in engineering." *DATA patron James Dyson,*

Design and Technology draws on additional disciplines such as mathematics, science, engineering, computing and art, complementing and enhancing student knowledge in these areas.

How can you deepen your understanding of DT?

Use Focus on DT software
Try to make things at home
Think carefully about products before buying them
Keep an ideas book
Use Food a Fact of Life website
Cook at home
Watch TV chefs
Visit the supermarket and look carefully at ingredients
Question what you eat and where the ingredients used to make it come from

How can DT support your future?

Everything that we own or consume is designed and made by someone or something, out of a material. We can become discerning consumers and creators.

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"Design and technology gives young people the skills and abilities to engage positively with the designed and made world and to harness the benefits of technology. They learn how products and systems are designed and manufactured, how to be innovative and to make creative use of a variety of resources including digital technologies, to improve the world around them" *Design and Technology Association 2022*

"Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation" *Mary Myatt 2022*

"Knowing how to prepare and cook your own food is a skill that everyone should possess. It's also a fun skill to learn!
Teaching children how to prepare fresh, healthy food in schools is a skill that can be used both inside and outside the classroom, and is something that will last a lifetime." *Foodforlife.org.uk 2022*

Possible career pathways include:
Engineer; Developer; Product Designer; Architect; Advertising & Marketing; Graphic designer; Materials engineer; Product manager; Production designer; Purchasing manager; Stylist/Interior designer; Prototyping/concept work; Chef; Caterer; Food Technologist; Nutritionist; Food Health and Safety Inspector.

CURRICULUM PROGRESSION PATHWAY

	Year 7	**Year 8**	**Year 9**
Autumn 1 **DESIGN** **TECHNOLOGY**	Coaster and Phonestand Develop basic manufacturing skills. Be able to demonstrate good workshop health and safety, using a range of basic tools, machines, equipment and materials to manufacture a range of simple products.	Aluminium Tealight Holder Build on the knowledge and skills from Y7 to follow the full design process to design and make a tealight holder. Select and use appropriate tools and machinery. Develop understanding of the properties of metals.	Aluminium Coat Hook Be able to translate working drawings to produce a practical piece within a set tolerance. Select and use appropriate tools and machinery.

Autumn 2 **DESIGN** **TECHNOLOGY**	Junk Robot Use research to identify and understand user needs. Develop a specification to inform designing. Use a range of techniques to communicate ideas and develop a product. Understand the use of Wood, its properties and suitability for the project. Know how to use a range of woodworking tools and machinery correctly, safely and effectively to produce an outcome. Test and evaluate outcome against specification and intended user.	LED light Through the use of the design process, develop a range of innovative ideas that can be developed and communicated using a range of techniques including CAD. Show understanding of how different materials and components can be combined to produce an appealing and functional product.	Aluminium Coat Hook Be able to translate working drawings to produce a practical piece within a set tolerance. Select and use appropriate tools and machinery.
Spring 1 **DESIGN** **TECHNOLOGY**	Junk Robot Use research to identify and understand user needs. Develop a specification to inform designing. Use a range of techniques to communicate ideas and develop a product. Understand the use of Wood, its	LED Light Select and use the correct tools, equipment and machinery for specific materials. Develop a basic understanding of electronics and soldering Understand how to use CAD / CAM to	Computer Aided Design Develop 2D and 3D CAD and CAM knowledge and skills. Develop electronic circuit and programming skills and knowledge. Design and develop 2D and 3D CAD modelling and schematic diagram modelling.

	properties and suitability for the project. Know how to use a range of woodworking tools and machinery correctly, safely and effectively to produce an outcome. Test and evaluate outcome against specification and intended user.	produce a professional outcome.	
Spring 2 **DESIGN TECHNOLOGY**	Sketching in 2D and 3D Introduction into how to communicate design ideas effectively using a range of different drawing and rendering techniques.	Technical Drawing Developing understanding of isometric and orthographic technical drawings.	Electronics and Soldering Develop electronics and soldering knowledge and skills. Design and make a product featuring a working electronic circuit. Develop CAD and CAM knowledge and skills.
Summer 1 **DESIGN TECHNOLOGY**	Race to the line competition Develop understanding of aerodynamics and biomimicry, and their influence on the design of products. Be able to apply their learning to solve design problems. Be able to select from and use a range of specialist tools and equipment to manufacture a fully functioning prototype.	Textile Pencil case Develop an understanding of textiles to design and make a fabric tie dye pencil case with a zip. Understand the needs of a user through research and a detailed specification. Design using a range of different types of modelling.	Fragrance packaging Design a range of innovative ideas that can be developed and communicated using techniques such as 2D nets and vacuum forming. Show understanding of how different materials and components can be combined to produce an appealing and functional product.

Summer 2 **DESIGN TECHNOLOGY**	Race to the line competition Develop understanding of aerodynamics and biomimicry, and their influence on the design of products. Be able to apply their learning to solve design problems. Be able to select from and use a range of specialist tools and equipment to manufacture a fully functioning prototype.	Textile Pencil case Develop an understanding of textiles to design and make a fabric tie dye pencil case with a zip. Understand the needs of a user through research and a detailed specification. Design using a range of different types of modelling. Understand what can be learnt from evaluating and testing a prototype.	Fragrance packaging Design a range of innovative ideas that can be developed and communicated using techniques such as 2D nets and vacuum forming. Show understanding of how different materials and components can be combined to produce an appealing and functional product.

CURRICULUM PROGRESSION PATHWAY			
	Year 7	**Year 8**	**Year 9**
Autumn 1 **FOOD TECHNOLOGY**	Developing cutting skills and understanding of kitchen hygiene, the 4Cs and how to avoid food poisoning	Food Commodities - Sugar - growing, processing and functionality Rice - production around the world	The digestive process - system, stages and function Allergens and nutritional values

	Practical element - cutting skills using an apple, carrot and orange. Skills - grating, slicing, dicing, coring, peeling, cutting and segmenting	Potatoes - potato farming and varieties Practical element - Pizza Wheels Skills - using yeast, slicing, dicing and kneading	Practical element - Pizza Skills - making a dough base, cutting, slicing and use of the oven
Autumn 2 **FOOD TECHNOLOGY**	Develop understanding of different cooking methods and techniques Knowledge of the cooker and how to use the cooker safely Practical element - layered pasta salad Skills - boiling, cutting	Food commodities - Meat - types and cuts of meat, storage and preparation and Meat & the consumer Practical Element - Chow Mein Skills - cutting, slicing, frying	Food labelling and legal requirements Practical Element - Fajitas (chicken or Quorn) Skills - cutting, slicing, frying and heating
Spring 1 **FOOD TECHNOLOGY**	Develop understanding of different cooking methods and techniques. Practical element - Pizza toast Skills - grilling, cutting	Food Commodities - poultry and eggs - egg labelling, poultry farming, rearing, broiler and breeding farms Practical Element - Cookies Skills - combining ingredients, baking	Healthy eating and dietary choices Practical Element - Spaghetti Bolognese Skills - cutting, slicing, dicing, boiling and frying
Spring 2 **FOOD TECHNOLOGY**	Develop understanding of different cooking methods and techniques Understanding fridge and freezer safety Practical Element - Flapjack	Food Commodities - Cereals - what are cereals?, bread industrial processes and the science of bread making Practical Element - Bread Rolls Skills - using yeast, kneading, mixing,	Dietary requirements - medical, religious, ethical, moral, lifestyle, health reasons Practical Elements - Dutch Apple Cake Skills - slicing, mixing and baking

	Skills - melting on the hob and baking	using the oven	
Summer 1 **FOOD TECHNOLOGY**	Develop understanding of different cooking methods and techniques The Eatwell Guide and healthy eating Practical Element - Cheese and Onion Triangles Skills - rubbing in method, grating and slicing	Food commodities - Dairy - milk production, dairy farming and milk processing Practical element - Mac 'n' Cheese Skills - boiling, making a sauce, baking, grating and slicing	Food waste - Impact on society, use of food banks, best before dates and the effects of packaging Practical Element - Chicken nuggets using chicken thighs Skills - deboning, cutting, using a food processor, baking
Summer 2 **FOOD TECHNOLOGY**	Develop understanding of different cooking methods and techniques Practical Element - Cheese Scones Skills - grating, rubbing in method and mixing, baking	Food commodities - Fruit and vegetables - seasonality, growing food and 5 a day Practical element - Mac 'n' Cheese Skills - boiling, making a sauce, baking, grating and slicing	Fish and seafood sustainability, preparation and cooking Genetically modified foods Practical Element - Chicken nuggets using chicken thighs Skills - deboning, cutting, using a food processor, baking