CURRICULUM CORE KNOWLEDGE PLAN

SUBJECT: Design Technology YEAR GROUP:` 7 DATE: 2024/2025

Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world.

Students will have one hour of Design Technology a week. The aim of the curriculum is to give students and introduction to the variety of knowldege, skills and understanding in irder to design and make high qualilty protoypes using the iterative design process. Students will gain experience in the importance of gathering primary and secondary resaerch, anaylsing and evaluating existing products using ACCESS FM and be able to use a vairiety of design techniques to mark out, measure, join and combind materials successfully. Students will underasstand the properties of various materials and will enhance their key words so they are confident in answering questions both verbally and orally using subject specific vocabulary.

The iterative design process will be aparant throughout the year with constant evaukluation and development, celebrating mistakes and resiliance. Throughout the course of year 7 students will develop their engineering drawing skills and be successful in producing perspective drawings and rendering.

Student s develop their primary and secondary research techniques to explore the Art Deco movement and the influence within the local community. They will use their boat design to create a pop up card experimenting and understanding mechanisms.

Students will use their developed drawing techniques to design a range of boat design inspired by the Art Deco movement, that they will transform into a prototype product in the workshop during the spring term.

Term and unit	Core knowledge	Core skills	Core Vocabulary	Revisiting prior knowledge	Links to Walney Ways & Employability skills/Careers
Autumn Term **Perspective drawing: One point perspective room**	**Design** To develop perspective drawing techniques. Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture	Students will be able to draw confidently in one point perspective. Students will develop these skills by using the drawing boards effectively to produce accurate one- and two-point perspective drawings. Students will begin to understand what a design brief is and the importance of a design brief during the design and making process. Students will be able to use their design brief to start the research and design process with some guidance and support. To work independently and as part of a team to problem solve to create a solution.	Perspective Annotation Computer Aided Design Computer Aided Manufacturing Design Brief Secondary research Accurate Horizontal Paralle Vertical Orthogonal Evaluate	Key stage 2 Design 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 Make select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately	**Walney Ways** Wider thinking Self motivated Communicative Aspirational Resiliant **Employability.** Organisation, planning and timemanagemen Problem solving Communication

STEM Project	**Evaluate** 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 To develop STEM based skills and working as part of a team to problem solve To understand buoyancy and force		Buoyancy Test Evaluate Refine Force Independence Problem Solving	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 Evaluate 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	**Walney Ways** Wider thinking Self motivated Communicative Aspirational Curious Resiliant **Employability.** Organisation, planning and timemanagemen

					Self awareness Problem solving Team Work
Art Deco inspired research & development into mechanisms to create promotional items.	**Design** 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 Use a variety of approaches to generate creative ideas and avoid stereotypical responses Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and	Students will develop their Art Deco Boat design by peer and self-assessment, they will analyse how to improve their design and continue the iterative design process. Students will look at the work of designers with the art deco movement to generate further sketches and design ideas. Students will develop an understanding of mechanisms, their beginnings in automaton (Hugo) and how they work. Students will develop an understanding of the properties of paper and card. Students will make a range of prototype mechanisms out of different thicknesses of card. Students will understand the importance of primary research and collate photos	Primary Research Secondary Reaerch Art Deco Mechanisms Iterative deisgn Prototype Promotional	Key stage 2 Design 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 Make select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting,	**Walney Ways** Wider thinking Self motivated Communicative Aspirational Curious Resiliant **Employability.** Customer/ client service and commercial business awareness. Organisation, planning and timemanagemen Self awareness Problem solving

	mathematical modelling, oral and digital presentations and computer-based tools **Make** Select from and use a wider, more complex range of materials taking into account their properties **Evaluate** Analyse the work of past and present professionals and others to develop and broaden their understanding Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups **Technical knowledge**	and drawings of the organic structures found along the Bay. Students will develop their secondary research techniques to collate ideas that respond to the design brief Art Deco. Students will use their primary and secondary research to create a range quick sketch Students will develop their sketching skills by using their research merge their design ideas to create quick thumb nail sketches of their boat designs. Students will understand what a design specification is and how you design to meet the points on the document. The specification will be given to year seven in relation to their design but also looking at specifications of other famous manufactured products and the people who design them. Students will be able to develop their sketches into accurate perspective drawing skills Students will use subject specific key words to annotate their design ideas		shaping, joining and finishing], accurately 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 understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]	

	Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions Understand how more advanced mechanical systems used in their products enable changes in movement and force.	effectively to explain their thoughts and ideas. Students will be able to analyse and evaluate their design ideas throughout the design process to create a boat design that has been inspired by the Art Deco movement.			
Spring 1 Product Design Wooden car/boat	**Design** Identify and solve their own design problems and understand how to reformulate problems given to them Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools	Students will understand and use subject specific vocabulary. Students will understand the meaning of a specification and be able to write a specification that relates to the design brief. Students will be modifying and refine their design ideas through peer and self-assessment. Students will be able to modify and refine their design ideas in relation to their design specification.	Art Deco Secondary Reserch Design Brief Design Specifcation Coping Saw Tenon Saw Accurate Vice Bench Hook Pillar Drill Disc Sander File Cross Filing Dowel Soft Wood Pine Plywood	Key stage 2 Design 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 Make	**Walney Ways** Wider thinking Self motivated Communicative Aspirational Curious Resiliant **Employability.** Customer/ client service and commercial business awareness.

	Make 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 **Evaluate** 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 **Technical knowledge** Understand and use the properties of materials and the performance of	Students will be able to annotate their design and evaluate their designs using key words and subject specific vocabulary. Students will develop an understanding of the properties of different types of natural and man-made wood. Students will be able to cut and mark out effectively. Students will be able to recognise and select appropriate machinery and equipment and will be able to use it safely and successfully with some accuracy.	Evaluate Production Plan Modify Marking out Measuring Jig	select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately 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 Evaluate 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	Organisation, planning and timemanagemen Self awareness Problem solving

	structural elements to achieve functioning solutions				
Spring 2 Design Technology Product Design Wooden car/boat	**Design** Identify and solve their own design problems and understand how to reformulate problems given to them Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools **Make** Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture	Students will be able to cut and mark out effectively. Students will be able to recognise and select appropriate machinery and equipment and will be able to use it safely and successfully with some accuracy. Students will be able to use CAD CAM to create a stencil	Art Deco Secondary Reserch Design Brief Design Specifcation Coping Saw Tenon Saw Accurate Vice Bench Hook Pillar Drill Disc Sander File Cross Filing Dowel Soft Wood Pine Plywood Evaluate Production Plan Modify	Key stage 2 Design 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 Make Select from and use a wider range of tools and equipment to perform practical task. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their	**Walney Ways** Wider thinking Self motivated Communicative Aspirational Curious Resiliant **Employability.** Customer/ client service and commercial business awareness. Organisation, planning and timemanagemen Self awareness Problem solving

	Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties **Evaluate** 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 3 **Technical knowledge** Understand and use the properties of materials and the performance of			functional properties and aesthetic qualities Evaluate 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	

	structural elements to achieve functioning solutions				
Summer Term **Acrylic and plywood Clock** **CAD/CAM**	**Design** Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools. **Make** Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture. **Evaluate** Test, evaluate and refine their ideas and products against a specification.	Students will develop designing, sketching and annotation techniques working with a brief and specification. Students will write their own specification from a design brief considering all ACCESS FM. Studnets will begin to develop their CAD skills and be able to design confidently with limited support to create their clock design using pro desk top. Studnets will understand the properties of acrylic. Students will research design movements to create a clock in the style of a design movement in history.	Design Movement Inspiration Secondary Reserch Design Brief Design Specifcation Accurate Bench Hook Plywood Evaluate Production Plan Modify Laser Cutter CAD CAM Computer Aided Design Computer Aided Manufacturing Acrylic	Key stage 2 Design 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 Make Select from and use a wider range of tools and equipment to perform practical task. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their	**Walney Ways** Wider thinking Self motivated Communicative Aspirational Curious Resiliant **Employability.** Customer/ client service and commercial business awareness. Organisation, planning and timemanagemen Self awareness Problem solving

	Technical knowledge Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions			functional properties and aesthetic qualities Evaluate 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	