Share Multi Academy Trust

Curriculum Planning Template

Subject:	Resistant Materials (Automata)	Year	8	Ability	All

Term / Date(s)	Technical Knowledge	Design Ideas	Making
Topic	Understanding Motion and mechanisms	Understanding the design process	Understanding Tools and Machinery
Students will learn…	Students will understand the importance of a Design Brief. Students will understand the process of designing for a client. Students will understand the types of motion linked to the outcome. Students will understand what cams are and where/why they are used.	Students will understand how to create a design idea using a Design Brief. Students will understand how to work to design constraints. Students will understand how to design to a theme.	Students will understand how to use tools, equipment and machinery safely. Students will understand Health and Safety rules within a workshop. Students will learn how to create a cam mechanism.
Components	• Students will analyse a design brief, picking out key information that will impact the outcome of the final product. • Students will understand a range of keywords linking to the design brief. • Students will understand the importance of essentials (must) and desirables (could) in a design brief. • Students will understand about motion and how this can be described using the correct technical terms. • Students will understand about the use of cams and their output motions and where they can be applied in existing products. • Students will be introduced to and complete Client Research amongst their peers to gain an understanding of their essential and desirable criteria. • Students will understand the properties of hardwoods, softwoods and manufactured boards. • Students will understand how to plan the practical making of the product. • Students will understand how manufactured boards are formed.	• Students will design a range of ideas using the theme ‘Motion’. • Students will work to design constraints of size and shape and output movement. • Students will learn how to create simple but effective design ideas. • Students will learn to render accurately and with precision. • Students will learn how to annotate key features of their designs.	• Students will use a range a range of marking out tools to mark out the automata: Marking Gauge, Try-Square, Steel Ruler. • Students will use a range of Tools to create an automata: Tenon Saw, Coping Saw, Bench Hook, File. • Students will use a range of Tools to create a high-quality, motion inspired autonoma: Coping Saw, File, Chisel, Sandpaper, Belt/Disc Sander. • Students will use a range of Equipment to create a layered design on their autonoma: Disc Sander, Wood Plane, Tenon Saw. • Students will apply Health and Safety measures within the workshop. • Students will understand about the importance of PPE in the workshop. • Students will learn to create a high-quality rendered or painted finish to their work. • Students will understand the importance of a high-quality final appearance.
What Students should already know (prior learning components)	• How to gather simple research to improve the products we use. Students should know the key features and characteristics of the Pop Art movement and how these can be implemented in their own work • How to identify the characteristics and uses of a range of mechanisms. • Understand what mechanisms are, and understand the differences between pulleys, gears, cams and levers and their applications.	• How to sketch 2D and 3D to convey an idea or concept. • How to use the design process to produce simple products in the workshop. • How to model an idea through a variety of media with an introduction to CAD – 2D Design	• How to conduct themselves safely in a workshop. • How to use the design process to produce simple products in the workshop. • How to work safely to mark out, cut, file and sand using the workshop tools and machinery to join materials to make a product • How to use finishing techniques such as stain and acrylic paint accurately. • How to identify a specific mechanism and recognise its key parts. • How to apply mechanisms into a product.
Golden Knowledge	• Understand that a design brief is a key tool within Design and Technology. • Understand that Timbers and Manufactured Boards have varying properties which affects their suitability for different projects. • Understand that Client research is an integral part of the design process.	• Understand that it is important to understand how to work to design constraints such as size and themes. • Understand that it is important to meet the design brief as part of the design process. • Understand that rendering is a technical skill and differs to that of shading.	• Understand that health and safety rules must be always followed in the workshop. • Understand that marking out is imperative to creating high-quality and accurate work. • Understand that it is vitally important to wear the correct PPE in the workshop.

	• Understand that mechanisms can produce different outcomes and they can be found in a range of applications around us. • Understand the difference in movement output between a range of different cam profiles.	• Understand that importance of using annotation to explain what cannot directly be seen.	• Understand that it is important to work within tolerance.
Transferrable knowledge (skills)	• Understanding the properties of timbers and manufactured boards. • Understanding a range of mechanisms. • Understanding about Client Research • Understanding about a Design Brief.	• Understanding how to use cams to create motion. • Understanding how to render using coloured pencil crayons. • Understanding how to design to constraints. • Understand how to draw using precision and accuracy.	• Understanding the importance of Health and Safety in a workshop. • Understanding about Tolerance. • Understanding basic measurements (mm/cm). • Understanding the importance of PPE.
Key vocabulary pupil will know and learn	Client Research Design Brief Sustainability Timbers Manufactured Boards Cams – snails, eccentric, pear Reciprocating Linear Oscillating Rotary	Cams Motion Evaluation Annotation Client Designer 2D/3D Nature Constraints Precision Accuracy	Tolerance PPE – Personal Protective Equipment Centimeters Millimetres Health & Safety Conduct Marking Out Equipment Tenon Saw Coping Saw Try Square
Assessment activities	Live Marking within lesson and regular use of Purple Pen. Recall and Retention activities. Verbal feedback throughout the lesson.	Formative Assessment – Marking of Design Idea's as a collective using the milestones. Live Marking within lesson and regular use of Purple Pen. Recall and Retention activities. Verbal feedback throughout the lesson.	Summative Assessment – Assessed piece of the final making. Live Marking within lesson and regular use of Purple Pen. Recall and Retention activities. Verbal feedback throughout the lesson.
Resources available	Resources for lesson delivery attached to the PPT's – print out in booklets prior to the start of the project.	Resources for lesson delivery attached to the PPT's – print out in booklets prior to the start of the project.	Resources for lesson delivery attached to the PPT's – print out in booklets prior to the start of the project. Materials for practical prepared before lessons.
Notes Why this topic is important Why this topic is important…	This topic is important as students are required to understand the importance of designing to a design brief. It is important they understand how to design to a client's needs and wants. It is important that students understand about the different mechanisms and motion types throughout Design and Technology.	This topic is important as students are required to understand how to design to constraints such as size and client requirements. It is important that they understand how to design to a high standard and understand the expectations set within design work. It is important that students understand how to use mechanisms within a project to create a desired output motion.	This topic is important as students need to understand the importance of Health and Safety within a workshop environment in keeping both themselves and others safe. Students need to understand how to create a range of wood joints and mechanisms within their work and develop independence when working in a practical environment.