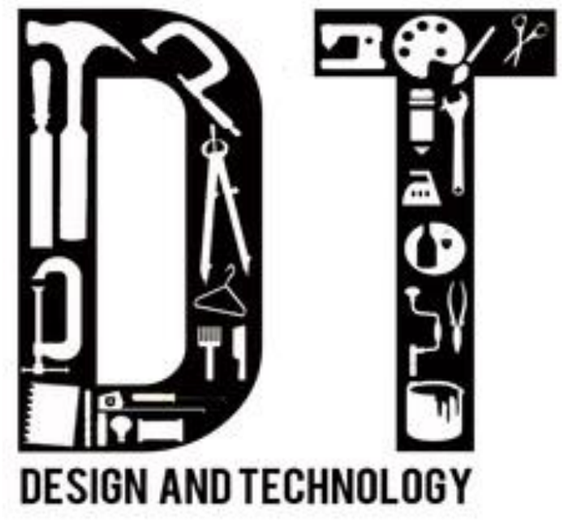

DESIGN TECHNOLOGY CURRICULUM STATEMENT

Design and Technology is about 'making things better'. The ability to 'do it yourself' is both highly practical and liberating. Problem solving and practical skills are essential life skills as we strive to become independent and resourceful homeowners and homemakers. From the capability of assembling an item of flat pack furniture to home decorating, from solving simple leaks to managing building contractors in our homes, our practical and problem solving skills will be tested throughout our lives. Design and manufacturing industries are essential to our economy. Design and manufacturing capability allows us to innovate products that both enhance our lives and make life better. Designers and engineers are entrepreneurs; they create jobs and employment through creativity and innovation. Engineers service our everyday needs from repairing our cars and washing machines to building our infrastructure. Designers and technologists will provide the practical and problem solving capabilities in reducing environmental impact.

The Design Technology curriculum at The Trafalgar School Downton will develop students' technical knowledge and practical competences. Our main priority is for students to work as problem solvers and effective communicators, not being afraid of making mistakes. Through the teaching of responsible design, students will become informed consumers who will make a positive contribution to society. Students will experiment and take risks with their ideas, in a safe and positive learning environment. Teaching will introduce students to new technologies and embrace new ideas and approaches. Manufacturing will resemble modern industrial processes, whilst retaining the best of traditional practices. By understanding materials and manufacturing processes, students will be able to design realistic, high quality prototypes and outcomes.

CURRICULUM INTENT – ***CURRICULUM IMPACT**

1. INVESTIGATING AND DESIGNING

a. Students will learn about the stages of the design process and apply this process in practical problem solving *so that* ***they gain experience in solving problems, asking questions and providing solutions in familiar and unfamiliar contexts.**
b. Students will be given opportunities to be creative, think laterally, and be 'inventive', either through the development of original ideas or in adapting and experimenting with existing products *so that* ***they can analyse situations and develop ideas that fulfil the requirements of the specification.**
c. Students will develop their communication skills i.e. sketching, technical drawing, rendering, annotation and presentation skills *so that* ***they can communicate their ideas and read technical drawings.**
d. Students will learn about material properties (resistant and textiles), structures, electronics and mechanisms *so that* ***they are able to select and use materials and components in realising high quality solutions to ideas, in familiar and unfamiliar contexts.**
e. Students will learn about responsible design and manufacture *so that* ***students make educated and informed decisions about ethical and environmental choices as designers or consumers.**

2. MAKING

a. Students will learn and practice practical skills and manufacturing methods *so that* ***they are able to select and use appropriate tools, equipment and processes in producing high quality outcomes.**
b. Students will learn about health and safety in the workshop *so that* ***practical work can be undertaken in a safe manner.**

3. EVALUATING

a. Students will reflect on all stages of the design process as well as the finished product *so that* ***they can to identify further improvements and they become reflective.**
b. Students will identify problems encountered and see these as an integral part of the design-make-evaluate cycle *so that* ***these can be avoided in future work**.

CURRICULUM IMPLEMENTATION (SEQUENCING)

Terms	1	2	3	4	5	6
Yr7 Units	**Design Technology: 'Funky Truck' – Wooden Toy**		**Textiles: 'Funky fleeces' - Hats**		**Product Design: Chocolate bar design**	
Key learning	Students learn about workshop safety, hand tools, machine tools and processes. An introduction to timbers, where they come from, and how they are processed. Producing a working drawing (Orthographic).		An introduction to textiles. Students learn about fabrics, analysing existing products, an understanding of the target market and designing. Students will learn to use a sewing machine, types of stitches and applique.		An introduction to graphical design, students learn about typography, the importance of colour in design and the use of a range of papers and boards.	
Assessment	Practical outcome - Wooden toy End of module test.		Practical outcome - Hat End of module test.		Practical outcome – Mock-up of a chocolate bar and packaging End of module test.	
Homework	Product analysis, materials research, wood joints and finishes.		Set tasks		Set tasks.	
Yr8 Units	**Design Technology: 'Amazing Automata'**		**Textiles: Cushion**		**Product Design – Memphis inspired cardboard lamp**	
Key learning	Students learn about mechanisms (cams, levers, cranks, gears and pulleys and types of motion. Drawing in 3D (Oblique).		Students learn about patchwork and tie-dyeing in the manufacture of a cushion. Students learn about templates, and seams. They continue to learn about fabrics – namely cotton.		Students will learn about some existing design movements, with a focus on Memphis. They will design and make a functioning lamp to be made from card, learning about using sustainable materials.	
Assessment	Practical outcome – Automata End of module test.		Practical outcome – Cushion End of module test.		Practical outcome – Functioning lamp made from cardboard End of module test.	
Homework	Product analysis, researching mechanisms.		Set tasks based around the design process.		Set tasks.	
Yr9 Units	**Design Technology: 'Bring the noise!' – Portable Speaker**		**Textiles: Drawstring Bag**		**Product Design: Retail interior design**	
Key learning	An introduction to electronics and systems. Students learn about manufacturing flow charts and construct simple circuits. The unit builds on their knowledge of timbers.		Students learn about more advance decorative fabric techniques and pattern cutting. Students learn about and use CAD/CAM in their designing and making, and find about manufacturing methods. An introduction to smart materials.		Students will learn about retail and spatial design. Using prior learning of typography, colour and graphical design they will develop a corporate identity and interior to be modelled from card.	
Assessment	Practical outcome – Speaker End of module test.		Practical outcome – Drawstring bag End of module test.		Design work and practical outcome – Card model of the designed retail interior. End of module test.	
Homework	Product analysis, flowcharts, electronic components and soldering.		Set tasks		Set tasks.	

Terms	1	2	3	4	5	6
Yr10 Units DT Textiles	**Textiles, papers, timbers and metals**	**Sustainability, ergonomics and anthropometrics**	**Emerging technologies, ethical design and working with textiles**	**Smart and modern materials including technical textiles**	**Energy generation and storage, mechanical systems and motion**	**Non-Examined Assessment**
Key learning	Textiles – also paper, timbers and metals. Characteristic of these materials, physical and their working properties. Investigating and analysing the work of others and drawing conclusions to use in own design work. Investigating existing products	Primary sources of papers, boards, timbers, polymers. M.E.S.S – Moral, Ethical, Social and Sustainable Sustainability and the environment. Ergonomics/Anthropometric data. Working with textiles. Finishing and joining techniques.	Critical evaluation of new and emerging technologies – planned obsolescence. Design for maintenance Ethics The environment Working with textiles Finishing and joining techniques. Components – including zips.	Developments in new materials Composite materials Technical Textiles, modern materials and smart materials	Energy generation and storage Renewable and non-renewable resources Nuclear energy, Energy storage, Kinetic pumped storage systems, Alkaline and rechargeable batteries Types of motion, Systems	Analysis of the contextual challenges supplied by the exam board. Identifying and investigating design possibilities for the preferred context. Producing a design brief and specification
Assessment	End of half term test (exam style questions) Google Classroom	End of half term test (exam style questions) Google Classroom	End of half term test (exam style questions) Google Classroom	End of half term test (exam style questions) Google Classroom	End of half term test (exam style questions) Google Classroom	Mock exam – Core Content
Homework	Set tasks	Set tasks	Set tasks	Set tasks	Set tasks	Set tasks

Yr11 Units	Non-Examined Assessment	Non-Examined Assessment	Non-Examined Assessment	Revision
Key learning	Generating design ideas	Realising design ideas, making the product.	Realising design ideas Analysing & evaluating	Exam preparation and revision

	Developing design ideas into a final design proposal. Final design proposal				
Assessment	NEA Mark scheme	Mock exam	NEA Mark scheme	Mock exam	
Homework	Set tasks	Set tasks	Set tasks	Revision	

Terms	**1**	**2**	**3**	**4**	**5**	**6**
Yr10 Units DT Timbers	**Mechanisms**	**Understanding and working with timbers**	**Polymers, papers and boards, Textiles** **Energy**	**Electronic systems**	**Design and communication**	**Non-Examined Assessment**
Key learning	Mechanical devices used to produce movement; some simple mechanisms will be made to demonstrate what they look like. Ferrous and non-ferrous metals, students will manufacture products from different metals to experience using them. Investigate and analyse the work of professionals and companies to inform design	Timbers in detail Sources of timber Selection of timber Strengthening timber Stock forms and sizes Manufacturing processes Equipment and processes used to make prototypes Surface treatments and finishes for functional and aesthetic purposes Students will make a pull along toy with a mechanism in it from timber.	Thermoforming and thermosetting polymers, students will experience using polymers by making a simple mould to vacuum form. Papers and boards, students will experience manufacturing prototypes using these materials. Energy; generation, storage and choosing appropriate sources Smart and composite materials Technical textiles	Electronic systems Programmable components Students will learn about programmable components by using simulation software demonstrating a range of programming techniques such as flow charts and block coding.	Use of different design strategies Using communication techniques to present design ideas. Students will undertake a mini piece of coursework to understand the structure of the NEA, they will use a range of drawing techniques and manufacture a prototype model to demonstrate proof of concept.	Introduction to the contextual challenges set by the exam board and select the one that appeals most. Investigation of needs and research and product specification.
Assessment	Exam style questioning throughout.	Exam style questioning throughout.	Exam style questioning throughout.	Exam style questioning throughout.	Exam style questioning throughout.	Mock exam – Core Content
Homework	Set tasks	Set tasks	Set tasks	Set tasks	Set tasks	Set tasks
Yr11 Units	**Non-Examined Assessment**	**Non-Examined Assessment**	**Non-Examined Assessment**	**Revision**		
Key learning	Design ideas, review of initial ideas, development of design ideas into a chosen design, communication of design ideas and review of the chosen design	Manufacture of the chosen design including modelling to ensure the final product is of high quality.	Manufacture of the chosen design including modelling to ensure the final product is of high quality. When manufacturing is complete testing and evaluation is undertaken.	Exam preparation and revision of the course materials		
Assessment	NEA mark scheme	Mock exam	NEA mark scheme	Final exam and NEA results		
Homework	Set tasks	Set tasks	Set tasks	Revision		

CURRICULUM PROGRESSION MAPPING

DESIGN AND TECHNOLOGY - CORE KNOWLEDGE & SKILLS - PROGRESSION MAPPING						
CONCEPT	**INTERVENTION**	**EMERGING**	**DEVELOPING**	**MASTERING**	**EXTENDING**	**BEYOND**
Investigating	Students can identify some of the important features needed in a design when given a design challenge	Students respond to a design challenge. They are able to write down a simple list of design criteria that includes a variety of different types of need.	When students respond to a design challenge they identify the important design features and constraints.	In response to a design challenge students use research, including product analysis, to identify and explain a few of the design criteria.	In response to a design challenge students generate a wide range of design criteria, explaining the implications of some of these by targeted research, including product analysis.	In response to a design challenge students generate a wide range of design criteria, explaining many of these by targeted research, including detailed product analysis. They show how all of their design criteria link to their research, and explain how some of their research will influence their designs.

Designing	Student can generate design ideas, using pictures and words to describe the idea.	Students generate a range of design ideas, identifying the important features and suggesting materials that they could be made from. They develop their ideas to produce a final design proposal. They put the processes needed to make a product in order and identify the tools and equipment needed.	Students consider the features and constraints when generating ideas, along with the needs of the user and environmental issues. They make some use of modelling to test their designs and are able to select a material or component that could be used in the product based on some of its properties. They identify some of the main stages needed to make a product, identifying the tools and equipment needed at each stage.	Students generate design ideas that satisfy a few of the design criteria, and refer to social, moral, environmental or sustainability considerations. They identify a variety of modelling methods that can be used to develop their designs and use modelling to test a few design features against the design criteria. They can select a few of the materials that could be used in their product based on some of their properties. Students are able to prepare step-by-step instructions for making a product which include some details of the processes and techniques to use and appropriate safety notes, identifying which activities could affect how well the final product will meet the general requirements of the design.	Students generate design ideas that satisfy some of the design criteria, giving reasons for the main features and making some consideration of either social, moral, environmental or sustainability issues. They use more than one type of modelling (including CAD where appropriate) to develop and evaluate their design against the design criteria, and are able to describe how their design ideas have developed. They select some of the materials that could be used in their products based on their properties. They prepare instructions for making a product which include alternative tools and processes to use and some quality control checks, identifying some of the individual activities that could affect how well the final product will meet each of the design criteria.	Students generate design ideas that satisfy many of the design criteria, showing how they have been influenced by social, moral, environmental and sustainability issues. They objectively evaluate their design ideas against some of the design criteria, making use of modelling or computer simulation, and consider the needs of the user. They explain how their design ideas have been developed and improved. They select most of the materials that could be used in their products based on their properties. They prepare detailed instructions for making a product, including operating parameters, process times and quality control checks, identifying most of the individual activities that could affect how well their final product will meet each of the design criteria.
Making	Student can identify the tools and equipment needed to make their own product and carries out practical work safely.	Students carry out practical work safely and independently, demonstrating some basic skills in a few processes, including CAM if appropriate.	During practical work students make simple products that are correctly assembled, demonstrating basic skills and awareness of safe working practices with a variety of tools or processes, including CAM if appropriate.	During practical work students make products that are generally well assembled, and with a good finish, demonstrating skills in a wide variety of tools or processes, including CAM if appropriate.	During practical work students make and assemble products that offer some challenge, demonstrating good skills in the selection and use of a wide variety of tools or processes, including CAM if appropriate.	During practical work make, assemble and finish products that offer 'real' challenge, demonstrating good skills in the selection and use of a wide variety of different tools, processes and finishing techniques, including CAM if appropriate.
Evaluating	Student applies simple tests of own product to see if it can do what it is needed to do.	Students test a product they have made to see if it can do what it is needed to do and explain any differences between the design and the final product.	Students carry out a simple evaluation of a product they have made and suggest improvements.	Students tests at least one feature of the final product against the design criteria and explains how and why the product was tested this way. They comment about how suitable the final product is for the target user.	Students test at least a few features of the final product against the design criteria and explain improvements needed to the final product.	Students select and justify a suitable method to evaluate their product, based upon its use, and test at least some features of the final product against the design criteria, improving their product after testing. They show that the product would be suitable for the target user.