

D&T - Textiles

Year 7 Curriculum

ASPIRE – ENDEAVOUR - SUCCEED

Purpose

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. 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.

Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply 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 their ideas and products and the work of others.

Threshold concepts

The Iterative Design Process

- Analyse - Research purposefully: Using a range of sources showing selectivity and analytical skill.
- Design - Visual Communication: Demonstrate innovation and creativity in response to a client's need/problem, using a range of 2D and 3D techniques.
- Make - Safe Working Practice: Select and use tools and equipment safely and accurately in order to manufacture a high-quality prototype that demonstrates a range of skills.
- Evaluate - Critical Reflection: Demonstrate the ability to reflect critically throughout the design process showing an understanding for modification and improvement.
- Technical Knowledge
- Impact on Society: Understand developments in Design and Technology, their ecological and social footprint with an awareness of the impact on society.
- ACCEESSFMM

These threshold concepts appear repeatedly throughout the curriculum.

Sequence of learning

In line with the faculty guidance students will begin the project with the design process. This provides consistency and helps student link the wider areas of faculty and hopefully allow them to transfer knowledge between faculty areas more easily. Students will also be tested on Word Power in the first lesson to ascertain their current knowledge and understanding of key terms. Students will then be reminded of ACCEESSFMM and introduced the foci words of ACCEESSFMM for the project so that students now what to expect a deeper insight into during the project.

Students begin by looking at careers with design process links. This provides an insight into different employment opportunities and pathways to them.

Next students will be given a lesson surrounding the project brief. The brief will be thoroughly explored. Students will successfully analyse existing products on the market using ACCEESSFMM key words as part of the market research task. Other textile artists will also be explored giving students insight to industry links.

Students will then consider their specification and what must be included for a viable hanging decoration linking to both their theme and target market. This will bring in the focus across the department of ACCEESSFMM with a focus on aesthetics, customer, ergonomics, function and materials. Students will gain knowledge into a new Textile technique – Appliqué understanding the meaning, application and origin. Students will revisit a key art skill – continuous line which will be used to complete an initial design board including shapes and patterns inspired by Biomimicry.

From here students will begin to design their product using annotation and rendering skills. Self and peer assessment will be used to influence the final design with specification analysis to enable students to design to both a spec and a brief. Students will also understand the importance of H&S when designing/ creating a product and how this can affect the target market.

Students will then be introduced to the main textile equipment that they will be using this term. This will be done alongside theory and other tasks to help embed the knowledge and allow for group learning and challenge such as definition tasks which can be independent as well allowing for the teacher to work with those completing a driving test on the sewing machine. Health and safety will also be taught at this time to ensure all students are trained on how to conduct themselves during a practical lesson. Students are then taught what CAD/CAM is and how it is used in textiles, both in industry and the classroom. They will then use this knowledge to help them complete their knowledge organisers and word power tasks throughout the term.

Students will then spend the next 2-3 lessons creating a sample on each embroidery stitch they will need to successfully manufacture their final product. Students will engage in visual presentations, videos, and demonstrations to support understanding and imbed knowledge. Embroidery will be used to decorate the products with patterns based to natural forms linking to biomimicry.

Pupils will then take all that they have learnt and apply it into making their final product based on their specification and design.

Subject knowledge Students should know that....	Procedural Knowledge Students should know how to...
<p>Design is a process that is cyclical/iterative</p> <p>Careers/Employment in the industry are explicitly linked to all or some aspects of the design process.</p> <p>Different careers focus on key areas of the design process and require different skill sets.</p> <p>Different careers focus on key areas of the design process. Rotation 1: Architects Rotation 2: Head designer at BMW</p>	<p>Identify attributes and characteristics of different job roles.</p> <p>Explain how the design process is linked to the DP.</p>

Rotation 3: Independent fashion designer Rotation 4: Engineers	
The order of the design process	
<p>What the acronym ACCEESSFMM stands for.</p> <p>A – Aesthetics - The appearance of a product</p> <p>C – Cost - The money paid to cover materials, equipment, labour, buildings and services so a product can be manufactured</p> <p>C – Customer - A single person or a target market group that a product or service is aimed at.</p> <p>E – Environment - The positive or negative impact a product may have on the environment. Including the materials and energy used for manufacturing.</p> <p>E – Ergonomics - the process of designing or arranging workplaces, products and systems so that they fit the people who use them. Body measurement data is used. (Anthropometrics)</p> <p>S – Safety - How safe a product is to manufacture and use</p> <p>S – Size - The physical dimension and measurement of a product and how appropriate it is for the user.</p> <p>F – Function - What a product does and how it works</p> <p>M – Manufacture - Techniques and processes used to manufacture/make a product.</p> <p>M – Materials – A resource used to manufacture a product.</p>	<p>Apply the terminology in several aspects of the design process i.e., product analysis, specification, and initial design annotation.</p> <p>Understand the main function of the product we will be designing and manufacturing – looking at other examples that are on the market (Product analysis)</p>
<p>Which ACCEESSFMM points are specific to this unit of work and know their individual definitions</p> <p>A – Aesthetics - The appearance of a product</p> <p>C – Customer - A single person or a target market group that a product or service is aimed at.</p> <p>E – Environment - The positive or negative impact a product may have on the environment. Including the materials and energy used for manufacturing.</p>	<p>Describe products in relation to these words/definitions. Use ACCEESSFMM to create specification for own product.</p>
<p>Design Brief & Situation</p> <p>A design brief is a document for a design project developed by a person or team in consultation with the client/customer. They outline the deliverables and scope of the project including any products or works, timing and budget.</p>	<p>Students will read though the design brief document, highlighting key elements that link to the specification.</p> <p>Students will understand the term ‘design brief’ and how these are used in many creative industries – focusing on the textile industry.</p>
<p>What is fibre?</p> <p>Fibres are very fine, hair-like structures that are spun or twisted into yarns.</p> <p>There are 3 different types of fibres (synthetic, natural and regenerated)</p> <p>The names of natural fibres and their properties (cotton, linen, silk and wool)</p> <p>The names of synthetic fibres and their properties (polyester, nylon and acrylic)</p>	<p>Students will understand the main two fibres of fabric (<i>This topic will be revisited in more detail throughout the project and finally in the mini print project</i>)</p> <p>-Natural -Synthetic</p>

<p>Fibres are turned into thread by pulling and spinning them together. They can then be turned into fabric using an industrial loom.</p> <p>The 2 directions a thread will travel in made into a fabric (warp = up and down, weft = left and right)</p> <p>The differences between a fibre and a fabric.</p> <p>M – Materials – A resource used to manufacture a product.</p>	
<p>Product Analysis</p> <p>Product analysis involves examining product features, costs, availability, quality, appearance, and other aspects. Product analysis is conducted by potential buyers, by product managers attempting to understand competitors and by third party reviewers.</p> <p>ACCESSFM will be used to successfully analyse existing products on the market (Hanging Decorations)</p> <p>Based on the following ACCESSFM key words.</p> <p>A – Aesthetics - The appearance of a product</p> <p>S – Size - The physical dimension and measurement of a product and how appropriate it is for the user.</p> <p>C – Customer - A single person or a target market group that a product or service is aimed at.</p> <p>F – Function - What a product does and how it works</p> <p>C – Cost - The money paid to cover materials, equipment, labour, buildings and services so a product can be manufactured</p> <p>E – Environment - The positive or negative impact a product may have on the environment. Including the materials and energy used for manufacturing.</p> <p>S – Safety - How safe a product is to manufacture and use</p> <p>M – Materials – A resource used to manufacture a product.</p> <p>Products, even though similar in shape and size, can vary in quality based on the materials and process used to make them.</p>	<p>Students will be introduced to product analysis, understanding the definition and the benefits of using this industry.</p> <p>Assess market researched base on existing products (Product analysis)</p> <p>Students will be supplied with a product that they will analyse.</p> <p>Size will be explored enabling students to use mathematic equipment to estimate the sizing of the product using correct dimension diagrams.</p> <p>Students need to understand the differences in target markets and what types of product appeal to each.</p> <p>Understand target markets and how this is used in industry.</p> <p>Students should design for a specific brand. Collect relevant items and images based on biomimicry.</p> <p>Cost will be looked at, with students giving opinions of cost and the differences in higher/ lower end markets.</p> <p>Environment – Linking to the 6 R’s of sustainability Rethink Refuse Repair Reduce Reuse Recycle</p> <p>Most of the decorations have been made from felt but students should identify what fibre this is. (Synthetic – acrylic based)</p> <p>Differentiate the quality of different hanging decorations and be able to compare them for advantages and disadvantages.</p>

<p>Specification –A design specification is a detailed document providing a list of points regarding a product or process. For example, the design specification could include required dimensions, environmental factors, ergonomic factors, aesthetic factors, maintenance that will be needed.</p> <p>A design specification needs to be produced to focus a designer’s intentions in designing a product for a certain audience</p> <p>The difference between a consumer and a manufacturing specification.</p> <p>The difference between features within a need and a desire.</p> <p>This will be built around the key ACCEESSFM words.</p> <ul style="list-style-type: none"> - Cost - Environment - Safety - Materials 	<p>Students will understand what a specification is and how to write a design specification they can follow to meet an audience needs</p> <p>Students will include words such as</p> <ul style="list-style-type: none"> - Must - Should - Could <p>And in further detail explain these linking to ACCESSFM Keywords.</p>
<p>Biomimicry -Biomimicry is the emulation of the models, systems, and elements of nature for the purpose of solving complex human problems.</p>	<p>Students will revisit biomimicry and understand the key word in further detail.</p> <p>Videos, examples, and diagrams will be used to imbed knowledge.</p> <p>Students will then complete a worksheet surrounding biomimicry and complete a set of innovative design examples.</p>
<p>Applique</p> <p>Applique is a French wording meaning ‘to apply’.</p> <p>This decoration technique is used to create surface decoration on fabric.</p> <p>Stitches need to be even and of a specific size.</p>	<p>Students will complete a set of questions on applique and understand the definition and origin.</p>
<p>Design</p> <p>Designs are developed using an iterative process</p> <p>The iterative design process is a continuous cycle where improvements can be made.</p> <p>Complete the following design stages</p> <ul style="list-style-type: none"> - Mind Map (Initial Ideas) - Drawing board - Biomimicry Designs - Design Developments x2 - Final Design <p>S – Safety - How safe a product is to manufacture and use</p>	<p>After completing the research stage, students will then design, Students will use their research to inspire and influence their designs.</p> <p>Continuous line will be revisited to build on skillset – this will be used to complete the drawing board.</p> <p>Biomimicry Pattern designs will be used to decorate surface using embroidery stitches – these need to be designed beforehand.</p> <p>Students will assess work after the design development stage, including peer assessment.</p> <p>This will guide students through the next process of final design, allowing them to refine and modify existing designs to form their final. - -</p> <p>Develop ideas through specification and feedback</p> <p>Challenge their design ideas to improve them.</p> <p>-Develop through the design process from initial ideas to developments to final design.</p>

	Students will also form a health and safety sheet surrounding their final product based on their final design.
<p>Textile Equipment Many styles of equipment are used in textiles depending on the product you intend to make. Focus will be on equipment such as:</p> <ul style="list-style-type: none"> - Fabric scissors - Sewing machine - Stitch unpicker - Needle - Thread - Pins - Pinking Shears - Iron 	<p>Students will spend time engaging in group and individual tasks to understand names and uses of key textile equipment.</p> <p>Students will be using equipment to complete a sample of stitches and their final product safely and successfully.</p>
<p>Sewing Machine The sewing machine a machine with a mechanically driven needle for sewing or stitching fabric. There are main parts to the sewing machine which they will use</p> <ol style="list-style-type: none"> 1. Thread up 2. Needle 3. Bobbin 4. Balance wheel 5. Stitch menu 6. Reverse stitch button 7. Spool pin 8. Stitch selector <p>The health and safety aspects related to the use of a sewing machine. Setting up a sewing machine in a repetitive process which will be used regularly during textiles. When threading the machine, they will need to look for putting the thread onto the spool, that they have created an 'N' shape with the thread at the front and that 2 threads are visible at the sewing plate before you are able to sew safely. Sew in a straight-line using lock stitch</p>	<p>Set up the sewing machine effectively and safely. Sew safely and confidently in a straight line, around corners and curves.</p> <p>(Sewing Machine Test)</p>
<p>Guide To Stitches Embroidery Stitches are used to decorate textile products and garments and can also be an effective way to attach materials together. The main stitches are;</p> <ul style="list-style-type: none"> - Running Stitch - Backstitch - Blanket Stitch - French Knot 	<p>Before completing their final product, students will practice set embroidery stitches. They will apply all the textile equipment knowledge and successfully apply in safe practice.</p>
<p>Production Plan Products can be manufactured from a variety of parts and materials. The different parts of the decoration are assembled in a specific order and what they are. What tool will be needed for the assembly of a fabric decoration (pattern cutting, embroidery needle, embroidery thread, embroidery stitch.) The correct order to assemble a felt decoration.</p>	<p>Identify the correct order that a hanging decoration should be manufactured using a production plan. Students will follow the production plan to the final steps.</p> <p>(double)</p>

<ol style="list-style-type: none"> 1. Create pattern based on final design. 2. Embroider biomimicry pattern 3. Pin Pattern pieces together (Back and front) Stitch together. 4. Stuff & Add ribbon. <p>A seam allowance is the space between the stitch and the edge of fabric which allows for a secure and durable stitch.</p> <p>Accurate stitching is necessary for a quality product (straight stitch).</p> <p>Sewing can also be corrected if mistakes are made using an unpicker</p> <p>Many processes and manufacturing techniques are used in industry. Students will focus on</p> <ul style="list-style-type: none"> - Mass - Batch - One Off 	<p>Make a high-quality product using a range of embroidery stitches.</p> <p>Correct own mistakes using an unpicker.</p> <p>Students will be able to give examples of each, understand the target market and give examples of companies or stores that use this type of manufacturing process.</p>
<p>CAD = computer aided design. Computer programs are used to create fabric decoration and garments.</p> <p>CAM = computer aided manufacture. Used to manufacture these garments and decoration techniques e.g. embroidery.</p> <p>CAD/CAM is used in a range of different ways in textiles and how we use it in school – sublimation printing = printed image onto special paper which is then transferred onto fabric for surface decoration, machine embroidery = stitching motifs, lettering and patterns and laser cutting = cuts out fabric shapes using a laser which plots from a CAD drawing.</p> <p>Industry – digital printing = printing directly onto fabric for surface decoration, batch machine embroidery = stitching motifs, lettering and patterns in bulk and knitting machines = a device used to create knitted fabric in a semi or automated way i.e. jumpers.</p>	<ul style="list-style-type: none"> - Used in other DT lessons – (cross curricular links) focusing on the CAD CAM used in textiles. - Identify why CAD/CAM is advantageous for manufacture.

Curriculum links to careers

Unit: All – Lesson completed at beginning of each term/rotation.

- Rotation 1 career: Architect
- Rotation 2 career: Head of Design at BMW.
- Rotation 3 career: Fashion Designer
- Rotation 4 career: Engineers

Links: How careers across the industry link with the design process. Looking at the daily roles of specific people/careers and how their job is reliant on the iterative design process, an integral part of each project students study in the rotation of D&T, textiles and food.

Outcome: Students identify links and explain how the employees work individually or as a team to meet the needs of the consumer/target market. Listing skills required for the role.