Knowledge Organiser - Year 9 Textiles

Decoration Techniques

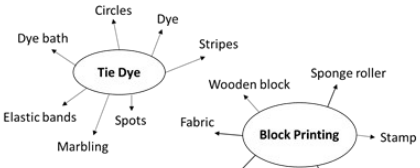

Stencilling

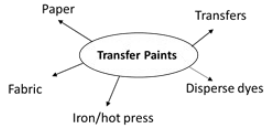

Tie Dye


Batik


Transfer Printing


Block Printing





Key Terms

Template

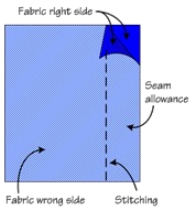
A template is created for each part of the product and used as a guide for cutting the fabric accurately. It ensures fabric is cut the right size and shape. Another word for a template is pattern.

Tacking

Tacking is a temporary stitch used to hold fabric together or in place whilst sewing on the machine.

Seam Allowance

Fabric is cut bigger than we need. This extra allowance of fabric is called the seam allowance. This ensures the product ends up the right size and has no holes. The standard measurement for seam allowance is **1.5CMs.**



CAM – Computer Aided Manufacture

Designs are produced on the computer using CAD (Computer Aided Design) and then sent to machines for manufacture.


Laser cutting


Iron on Transfer Printing


Sublimation Printing


Machine Embroidery

Specialist Equipment

Embroidery machine - computerised embroidery machine automatically sews what you input.

Tjanting – used for drawing hot wax for batik.

Wax pot – used for melting wax pellets for batik.

Hot press – an industrial style iron used for transfer printing.

Laser cutter – a computerized machine that uses lasers to cut a variety of materials including fabric, wood and plastic.

Stencil brush – used for stippling fabric paint when stenciling.

Components

Textile components are extras that are added to the fabric used to make a textile item.

- Button
- Sequins
- Ribbon
- Lace trim
- Embroidery threads
- Ric Rac

Repeat Patterns

A design for decorating a surface composed of a number of elements (motifs) arranged in a regular or formal manner.

A pattern relies upon three characteristics - a single motif, repetition of the motif and a system of organisation.

Construction Techniques

A plain seam is the join of two pieces of fabric to make a Textiles product that has been stitched together using the sewing machine. It takes 2D fabric and makes a 3D product.

Year 9 D&T Core Knowledge Organiser

Design Influences

The Impact on the Environment: Life Cycle Assessment

Designers must be aware of the impact that the manufacturing, use and disposal of their products may have. Understanding the materials used, components and energy sources involved help to build a picture of how environmentally friendly a product's production and use could be.

The main stages of Life Cycle Assessment are:

Raw Materials
- product requires reduced amount of raw materials;
- product uses recycled materials extensively.

Manufacturing
- production conserves energy;
- production conserves materials/allows recycling of raw materials
- prevention of pollution to air, water and underground water.

Distribution
- product uses simplified packaging;
- product is distributed more efficiently;
- product is delivered by low-emissions vehicle.

Consumer Use
- product consumes less power;
- reduced use of additional materials (for instance water, oils,

Post-Consumer Use
- product is designed for disassembly/easier recycling;
- product uses lower amounts of harmful substances.

6R's of Sustainability

REDUCE What parts can you reduce in size to save material? Are all the parts needed to make the product function the way you designed it?	**REFUSE** What materials could you refuse to use? Could you refuse to use materials that have not been responsibly sourced?
RETHINK How could you rethink the design to use less material? Could you choose more environmentally friendly materials?	**RECYCLE** Could parts be made from recycled material? Could you use materials that can be recycled?
REUSE Could the product have another use? Could its parts be used in other products to extend the products life?	**REPAIR** Is the product easy to repair when its broken? Can fixings be easily accessed?

Manufacturing Techniques

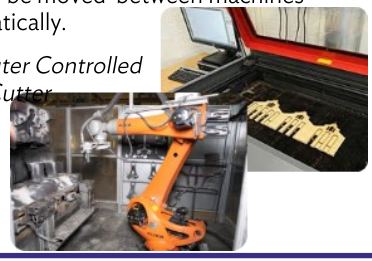
Bought-In Parts

Many products and manufacturers make use of 'Bough-In' parts and standard components. These may include zips, buttons, nuts and bolts, wood dowels or hinges for example. This is often to reduce costs, use less specialist machines and make manufacturing simpler.

Computer Aided Manufacturing (CAM)

A range of computer guided machines can be used by manufacturers to complete highly accurate products or components at speed. Due to the machines following step-by-step code (generated by a computer), it is possible for parts to be replicated over and over. Examples of CAM include computer guided laser cutters, embroidery machines, Routers and Vinyl cutters. Robotic Arms also allow flexibility in manufacturing and the ability for products or parts to be moved between machines automatically.

Computer Controlled Laser Cutter



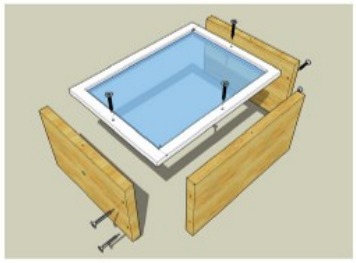
Health and Safety

When moving on to practical work for your projects, the rules associated with a classroom in D&T are vital to keep you and others safe. You need to be able to recall these rules and understand their importance. Based on different locations or activities, you should be able to identify associated risks and state at least two separate control measure that can be put in place to help reduce potential risks to those undertaking the activity and others around them. The use of PPE (Personal Protective Equipment) is one important way of staying safe in any practical room. This may include the use of aprons, goggles, ear defenders or gloves for example. Health and hygiene is also vital in areas such as kitchens.

Design Communication and Manufacture

Exploded Drawings

These technical drawings can be useful in helping to explore how components and parts fit together. They can be drawn up more accurately and form a plan for the assembly of parts when producing a final prototype.



Mathematical Modelling

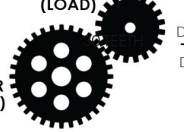
All models can contain some mathematical information to help a designer, but sometimes it is necessary to create a special model, for the purpose of gaining mathematical information about the intended product. This might include:

- calculating the amount of material required;
- researching joining solutions;
- using structural strength data;
- making calculations to do with the overall size and weight of the product.

Maths in D&T

Working out gears ratio (velocity).

In your GCSE exam there could possibly be questions referring gears and mechanisms. You will need to work out the gear ratio, often referred to as velocity.



$$\frac{\text{Distance moved by Effort}}{\text{Distance moved by Load}} = \frac{60}{30} = \frac{1}{2}$$

$$= 1:2$$

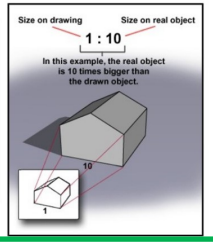
Working out scale in technical drawings: Ratio & Proportion.

Ratios are used in everyday life and can help you work out problems including scale drawings and reading maps. In a scale drawing, all dimensions have been reduced by the same proportion.

When producing orthographic drawings such as product plans it is not almost possible to draw them on a single piece of paper.

Instead they are drawn to a smaller, reduced size. The size reduced becomes its ratio.

Twice as small = 2:1
Ten times smaller = 10:1



Ratios are usually written in the form A:B.

After all an Architect couldn't draw a full size house on a single piece of paper.