Whitstone School
inspiring futures

Design Technology Textiles

Year 8

Home Learning Booklet

Name _____

Tutor Group _____

Teacher _____

Given out: Monday 27 January Hand in: Monday 3 February

Parent's Comment
Staff Comment
Target

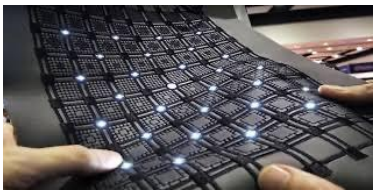
Aims and Objectives

The aim of this booklet is to develop your understanding of Textiles and Design. To look at man-made and natural materials and how they are used.

- Develop your research skills.
- Apply technical knowledge to explain how textiles can be developed.
- Learn to improve presentation skills.
- Use development in producing a final product.

Tasks

1. Complete some research and summarise your findings.
2. Demonstrate further learning by explaining how fabrics are produced.
3. Complete a design section.
4. Evaluate your design ideas and ask others what they think.
5. Produce a final design solution and evaluate it.



Modern, Combination & Smart Fabrics

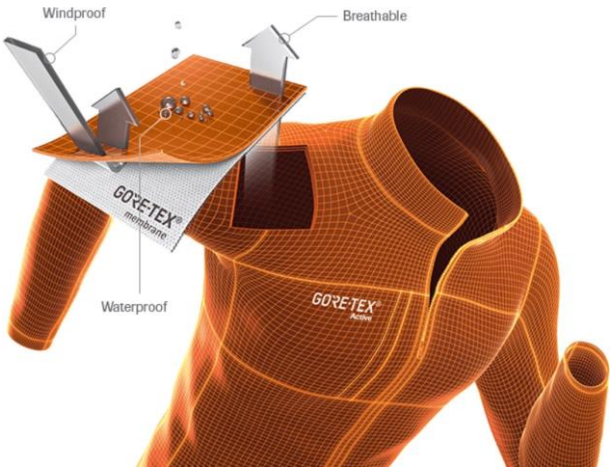
Modern Fabrics - Modern (and smart) fabrics are designed to maximise characteristics such as lightness, breathability, waterproofing or to react to heat or light. They are manufactured using microfibers.

Combination fabrics - Fabrics can be layered and combined to improve their handling, appearance or performance. For example: An interfacing fabric such as Vilene can be stitched or laminated to other fabrics. This reinforces, stiffens and gives strength to collars and cuffs to prevent the fabric from stretching or sagging.
A quilted fabric has two or more layers sewn together to give an attractive appearance and added warmth. Gore-Tex can be laminated to another fabric using adhesive or heat. Gore-Tex is used for all-weather clothing and shoes because it is breathable and waterproof.
Kevlar is a high-strength, lightweight and flexible fibre. It is used in bicycle tyres, racing sails and police bullet-proof vests because of its high strength-to-weight ratio.
Thinsulate is a highly insulating but thin fabric. The microfibres in Thinsulate are fine and capture more air in less space, making it a better insulator. It traps air between the wearer and the outside. It can be machine washed and dry cleaned, and is breathable as well as moisture resistant. Scuba divers wear a Thinsulate suit under a dry suit when diving in cold water.

Technology in textiles - Textiles manufacturers use new technological developments to improve fabrics by giving them new properties. These might be developed for a special reason, but then adapted to be used in everyday products. For example: Memory foam moulds to the user's shape and can return to its original state. It was originally developed for NASA astronauts and is now used in memory-foam mattresses and seats. Smart-shape-memory alloy returns to its original shape when heated. Smart memory fibres are woven with nylon to make smart-memory shirts that don't need ironing. Fastskin is used in swimsuits to simulate the texture of sharkskin. It increases a swimmer's speed by reducing drag through water.

Choosing materials - It is important to choose materials that are fit for purpose. Choosing a fabric with the appropriate quality and cost will ensure that a product will suit the target market. When making fabric choices, ask yourself the following questions: Fibre content: should you use natural or synthetic fibres? Fabric construction: should you use woven, knitted or non-woven? Manufacturing processes: should you use dyeing, printing, mechanical finishing or chemical finishing? End use of the fabric: what are you making, eg jeans, sportswear or a seatbelt? Maintenance: what are the aftercare requirements of the product? The fibre content, fabric construction and finishing processes determine the fabric's aesthetic, functional and comfort properties.

It is important to match fabric properties to the requirements of the product. For example: cycling jerseys need to be breathable and made from fabric that is warm, breathable, elastic, windproof and water resistant. Children's jumpers need to be made from fabric that is soft, colourful, stretchy, warm and easy care. Seat belts need to be made from strong, durable, flame-resistant materials. Fire-protective clothing needs to be strong, durable, flame resistant and water resistant. It may also need to be breathable and elastic. Geotextiles need to be strong and durable so they stop embankments from slipping.



TASK 1.

Having read the article on modern, combination and smart fabrics answer the following questions.

1. What determines the fabric's functional and comfort properties?

_____

2. Name a thin fabric that is also highly insulating.

_____

3. Why are modern and smart fabrics designed/created?

_____

4. What material was adapted for everyday use, despite being created for astronauts?

_____

5. What properties should a cycling jacket have?

_____

6. Name 3 products you would select Kevlar for the main fabric choice.

_____

_____

_____

7. What are the main properties of Kevlar?

_____

8. What technique is used for laminating Gore-Tex to another fabric?

_____

9. What material would be used on embankments because it is strong and durable?

_____

10. Why is Fastskin used in swimsuits, replicating sharkskin?

_____

TASK 2.

A) Can you name the style of stitch in the image below?

B) Draw the fabric pattern for the pieces you would need to make this bag.

TASK 3

Sketch and annotate a step by step guide of how to make/produce your festival bag.

TASK 4 Initial Design Ideas

Sketch out several design ideas for a new bag for an office worker, who carries their technology and lunch on a daily basis to work using one of the modern, combination or smart materials mentioned in the research task.

What do other people think about your designs? Ask your friends & family to write a comment in the space below.

Good points

Things you could change

TASK 5 Final Design

Take the ideas from your initial ideas to produce a final design—must be coloured and annotated and state what fabrics you would need, why you would use these fabrics and what properties it needs.

Explain here why you think this design would be good.