Learn Skills – Waste Less

Get creative and redesign an existing garment while exploring the impact our clothes have on the environment.
With Repairwhatyouwear.com

The aim of repairwhatyouwear.com aim is to encourage mending skills so that clothes are kept for longer and therefore waste is reduced. It also aims to provide an understanding of the fibres and fabrics from which clothing is made, so that individuals become informed consumers. This project develops practical hand-sewing skills together with research on the impact that clothes have on the environment. It gives pupils the ability to make more informed choices about what they wear. It links well with Eco School, Rights Respecting Schools Awards and Learning for Sustainability 2021.

Suitable for 4th level CforE, 5th Level SQA

Project brief/ Learning Intentions

There is a trend in fashion towards sustainability. This project explores the environmental reasons why this trend is growing. Learners can select the profile of a group of people who follow this trend and make a garment for them to wear to an event.
Re-purpose and restyle an old t-shirt, shirt or other cotton garment using hand sewing, dying and by adding embellishments of polyester and buttons. Give an old piece of clothing a new look whilst also learning new skills and finding out all about the impact clothes have on our world.

Skills(S) and knowledge (K) that the project will develop:

- S - Research and analysis.
- S - Thinking skills to analyse their response to research.
- S - Project concept development.
- S - Fine motor co-ordination skills.
- S/K - Hand sewing skills.
- K - Different fibres and fabric characteristics.
- K - How clothes are manufactured and their effects on the environment.
- K - Awareness of their personal clothing choices within the environmental sustainability curriculum.

This project brief document contains the following information:

The Clothing problem - Fashion Statistics to share:

1. Fashion is responsible for 10% of global carbon emissions, more than all flights and maritime travel combined.
2. It is responsible for 17-20% of global water pollution.
3. Cotton production alone uses 16% of global pesticides and 73% of the land is irrigated in communities where water is a scarce resource.
4. Fast fashion is the growth area where prices are kept low through a combination of low quality materials and poor working conditions for those in the industry.
5. Polyester fibres now make up 60% of all clothing production. Derived from fossil fuels, they are made from a non renewable source and don't biodegrade.
6. Cellulosic fabrics, like viscose, modal, although 8% of fabric components fibres are now using 150 million trees per annum and expected to double in 10 years.
7. The UK consumes more clothing than any other country in Europe and twice that of Italy.
8. In a recent study, 98% of water samples taken from under the Arctic Ice and in the Polar region contained Micro plastics, 92% of which were fibres and 75% of which were polyester, the same width and colour as used in clothing.
9. High Street purchasing is in decline. Internet orders have a much higher rate of returned product, estimated at 30-40% and about 50% of the total returned product is not put back into stock - either burned or put in landfill as this is the cheapest way of dealing with it. This means clothes are manufactured, never worn and then pollute again.
10. Globally, 9% of fashion is recycled into other materials like insulation, wadding, cloths. It is estimated that 80% of discarded clothing ends up in landfill, if not in the country where it was originally bought, then in another country where it was exported for resale.

References to support these statements:

1 - 4. World Bank report overall fashion statistics: **https://www.worldbank.org/en/news/feature/2019/09/23/costo-moda-medio-ambiente**. **https://www.weforum.org/agenda/2020/01/fashion-industry-carbon-unsustainable-environment-pollution/**
5. Polyester and synthetic clothes information: **https://www.unep.org/news-and-stories/story/fashions-tiny-hidden-secret**
6. Fibres2Fashion report: **https://www.fibre2fashion.com/industry-article/7365/fashionable-fabrics-leading-to-deforestation**
7. Parliamentary report 2019, UK statistics: **https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/1952/report-files/195207.htm**
8. Clothing Micro plastics under the Arctic Ice: **https://www.theguardian.com/environment/2021/jan/12/clothes-washing-linked-to-pervasive-plastic-pollution-in-the-arctic**
https://www.nature.com/articles/s41467-020-20347-1
9.
10.https://www.weforum.org/agenda/2020/01/fashion-industry-carbon-unsustainable-environment-pollution/

Project brief

Given the trend towards sustainable fashion, re-purpose an old t-shirt, shirt or another cotton garment for a specific audience, using hand sewing, dying and adding embellishments of polyester and buttons.

Learning Intentions:

- Find out about the impact clothes have on our world and consider what actions should be taken to reduce this impact.
- Understanding the origins and characteristics of key fashion fibres through experimentation.
- Using this knowledge and understanding to design and make a final garment through repurposing used clothing.

Starting the project:

It is important that pupils have some background knowledge of the environmental impact of the clothing industry before they start the practical project – **fashion statistics** can be shared and discussed with the class. This information is key to the trend towards fashion sustainability.

Suggested questions below can be researched in groups or as individuals. Cotton should always be included, but students could select another 3-4 to research as well.

Research questions suggestions:

- Cotton is the seed head of a plant - how does it grow and what is the difference between ordinary cotton and organic cotton production. Why might organic cotton be better for the environment and for the people who grow it?
- What are the different ways cotton is picked and how might that affect communities?
- How is polyester made? What are its key characteristics?
- 60% of clothing contains Polyester, why might this be a concern to environmental sustainability? What options exist for a polyester garment at the end of its life?
- What is the key difference between natural and synthetic dye stuffs? What prevents all textiles being dyed with natural dyes?
- Which processes create water pollution when dying and printing textiles?
- Learning to use a needle and thread means you can mend/fix your own clothes. What benefits do you think that might have for you and for the environment?
- Which key actions do you think will most reduce the negative impact of fashion on the environment? What changes would you like to see?
- What happens to your clothes when you give them to charity shops or recycling?
- How are polyester microfibres getting into the ocean and what is the impact?

In groups or as individuals, students can discuss the answers found to the questions, analyse and decide what message, image, or style impact they want to convey with their garment.
They may sketch out a profile of their consumer or an event the consumer wants to attend.

Ideas for Extension:

Explore Fashion and politics:

- Fashion has been used as a political statement. Which designers have done this and what sort of statement have they made with their clothes? Has a written statement on a T shirt been done too often? How can you be more inventive and make your audience think more deeply?

See Katherine Hamnett's protest T shirts, Alexander McQueen's "I'd rather go naked than wear fur", and the "me too" movement wearing black at the Golden Globes. https://www.teenvogue.com/story/18-moments-when-fashion-and-politics-merged-in-the-last-decade.

- **Explore the characteristics of cotton and polyester fabrics.**

Compare the characteristics of these different fibres through experimentation. Instructions and chart provided in resources.

Extension Questions:

- Cotton (24%)* and polyester (50%)* are the most popular fibres in clothing. Which fibre characteristics make them so desirable in fabrics?
- Both Cotton and Polyester are bad for the environment but in different ways. Explain the benefits and negatives of each fibre.
- Why do cotton and polyester need different dye stuffs and different methods of dying?
- Why will polyester not take natural dyes well?
- Identify a small selection of polyester garments and ask why polyester is the best fibre for the function of the item?

* Statistics from 2017.

Slavery and forced labour in the fashion industry:

From picking and processing cotton to making garments in Leicester (England), the fibres, fabric and garment industry is using unregulated labour today.
Research three examples of current practice, including Uighur labour in Western China.
What do you think are the most important steps to prevent exploitation of people for fashion?

https://www.bbc.co.uk/news/extra/nz0g306v8c/china-tainted-cotton

Student Brief:

To reflect the trend of sustainable fashion, re-purpose an old t-shirt, shirt or another cotton garment using hand sewing, dying and by adding embellishments of manipulated polyester and buttons. Give an old piece of clothing a new look/life whilst also learning new skills and finding out all about the impact clothes have on our world.

Before you design, understand the garment you have chosen:

1. Count the number of different pattern shapes in your garment and roughly **draw them on a separate sheet**, thinking about how they shape to the body. *Note answers Q2-6 below onto this sheet.*
2. Identify the structure/s of the fabric. Is it knitted or woven? Rib? Is there any elastane/ stretch?
3. Explore and explain how the structure of the cloth affects the way the garment behaves and analyse why this cloth was chosen for this garment.
4. Examine the different types of stitching and their function, e.g. overlocking on side seams to neaten and join seams together.
5. From which retailer (or type of retailer) was the garment bought and the approximate value?
6. How would you describe the original target audience for this garment?

ASSESSMENT: TCH 4-04d, TCH 4-04a. CAS level 5, numbers 1,2, 3, (9, 10, through analysis)

Design challenge.

- Analyse your Eco conscious customer, the influences on their lives, the fashion choices they would make and write an appropriate brief to meet their needs. What statement would they want to make?
- Reflect on the research that you have done about the environmental impact of fashion. What message do you want your garment to make? Think of how you can use words, shape, texture, manipulated cloth to make that statement.
- Write or sketch up your ideas.
- Create an order of work with timings and sequencing.

ASSESSMENT: TCH 4-04c. CAS level 5, numbers 3, 4, 5, 6, 7, 8, 12.

Skills that must be demonstrated in your Cotton Garment redesign:

Fabric Dying:

- Experiment with vegetable dyes on your cotton T shirt. You can paint, dip, immerse, print, wrap. *See resources for ideas.*

ASSESSMENT: TCH 4-04b. CAS level 5, numbers1, 2, 11, 13, 15.

Exploring the impact of heat on polyester fabric:

- Restyle polyester ribbon/fabric through heat manipulation and design its use as part of your new garment. Fold, gather, wrap around coins, pleat, and apply heat to create new types and samples of cloth using a vegetable steamer or hot iron (with silicon paper either side of the fabric to stop burning). *See written resource.*

ASSESSMENT: TCH 4-05a, TCH 4-04b, CAS level 5, numbers 1, 2, 10, 11, 13, 15.

Hand stitching and decoration/alteration:

- Your final garment must include the following hand stitching: **Buttons, Running stitch, Backstitch and Cross stitch (or Herringbone)**. *See tutorial videos @ repairwhatyouwear.com.* Use sewing thread, embroidery threads, yarns or string if it suits your design. You could use stitches to attach your polyester decoration to your final product or use stitching to make a visual statement e.g. patching, decoration, creasing, pleating, distressing etc.

ASSESSMENT: TCH 4-04b. CAS level 5, numbers 10, 11, 13, 14, 15. (Excluding paper pattern)

Written activities:

- Using the order of work for your project, keep notes as you progress.
- What is your wish for this item when it is at the end of its life? What can be recycled and what would you keep for using again? What will go to landfill?
- Write up what you have learned about clothes and the environment and what we can do to keep wearing our clothes for longer.
- Present your project and conclusions in a visual and written format that fits with the theme "Fashion and Environment".

ASSESSMENT: TCH 4-04d, TCH 4-05a. CAS level 5, numbers 8, 12, 14.

Suggested Materials Checklist:

- A used cotton T shirt clothing item, T-shirt, shirt or similar.
- Used polyester ribbon/fabric/garment. This should be woven and fairly light.
- Natural or synthetic dyes that work with cotton cloth (*details in resources*).
- Needle, thread, scissors for hand sewing.
- Assorted buttons and other accessories from used clothing/charity shops/friends.
- An iron, ironing board and silicon paper or two Teflon sheets. Pins. For heat setting polyester ribbon and small areas of fabric.
- A vegetable steamer for heat setting larger amounts of polyester fabric.

Optional:

- Masking tape, elastic bands, string for resist dying and polyester manipulation.
- Paint brushes for writing with the dye.
- Sewing machines for reshaping the item - although this can be done with a needle and thread and simple running stitch or backstitch.

Experiences and Outcomes CofE for Teacher Planning - Level 4

- *I can explore the properties and functionality of textiles and equipment to establish with suitability for a task at home or in the world of work.* ***TCH 4-04a***
- *I can confidently apply preparation techniques and processes to make textile items using specialist skills, materials, equipment in my place of learning, at home or in the world of work.* ***TCH 4-04b***
- *Showing creativity and innovation I can design, plan and produce increasingly complex textile items which satisfy the needs of the of the user, at home or in the world of work.* ***TCH 4-04c***
- *I can apply skills of critical thinking when evaluating the quality and effectiveness of my own or other's products.* ***TCH 4-04d***
- *I can analyse products taking into consideration sustainability, scientific and technological developments.* ***TCH 4-05a***

Skills, knowledge and understanding for the course assessment - National 5. (CAS)

The following provides details of skills, knowledge and understanding sampled in the course assessment:

1. Choose textiles based on their characteristics and properties, and evaluate their suitability for different purposes: e.g. fibres: natural, regenerated or synthetic fibres.
2. Types of fabric construction: woven, knitted, felted, bonded
3. Explain fashion/textile trends
4. Explain the fashion/textile choices of consumers:
   • peer pressure, celebrity/role models, online shopping, environmental issues
5. Use investigative techniques to carry out detailed investigations into given briefs
6. Interpret and develop solutions for detailed fashion/textile items to meet given briefs
7. Briefs may focus on one or more of the following:
   • the end use of the item
   • techniques to be used in the item
   • textiles or components to be included in the item
   • a fashion/textile trend
   • the fashion/textile choices of a target consumer group
8. Present and justify solutions for detailed fashion/textile items with reference to given briefs
9. Identify, use and demonstrate understanding of the information used in detailed paper patterns
10. Choose and use a range of construction techniques and evaluate their suitability for purpose
11. Use surface decoration techniques when appropriate
12. Produce detailed work plans with a timed and logical work sequence
13. Produce accurate requisitions for appropriate textiles, components, equipment and tools
14. Make detailed fashion/textile items to an appropriate standard of quality, including using a paper pattern.
15. Demonstrating understanding of selection, setting up, adjusting and use of equipment and tools

SQA National 4 Unit Specification:

Using “Fashion and the Environment with a trend towards sustainability” the brief can be used for the following units. The learner could select an individual customer profile or event for which the garment is made with the sustainable movement in mind.

The project fits into Fashion/Textile item development (nat 4) Code H24X 74:
The general aim of the unit is for learners to explore fashion/textile trends and the fashion/textile item development process.
Outcome 1
The learner will:

1 Plan the making of straightforward fashion/textile items that take into account fashion/textile trends by:
1.1 Describing a fashion/textile trend
1.2 Developing a solution for a straightforward fashion/textile item, based on the
trend, in response to a given brief
1.3 Producing a straightforward work plan with a logical work sequence and a requisition for appropriate textiles, components, equipment and tools

Outcome 2
The learner will:

2 Make straightforward fashion/textile items that take into account fashion/textile trends by:
2.1 Selecting appropriate equipment and tools to make the chosen item
2.2 Setting up equipment correctly and according to safety guidelines
2.3 Using equipment and tools correctly and according to safety guidelines
2.4 Making a straightforward fashion/textile item according to the solution and the plan, to an appropriate standard of quality

The project fits into Fashion/Textile item development (nat 4) Code H251 74:
1 Develop a straightforward fashion/textile item that takes into account factors that affect the fashion and textile choice of others by:

- 1.1 Carrying out a straightforward investigation into factors affecting fashion/textile choice for a chosen group of consumers
- 1.2 Presenting and justifying a solution for a straightforward fashion/textile item that will meet the fashion/textile choices of this group.

Resources:

https://repairwhatyouwear.com

Core mending skills (all left and right handed) include:

- How to thread a needle
- Backstitch (for mending most seams)
- Herringbone (for mending hems)
- Buttons (both 2-4 hole and stemmed).

Beginners Embroidery includes Cross stitch which can be substituted for herring-bone as similar.

Education section Includes:

- Cotton fibre video
- Cotton fibre written information sheet
- Polyester/synthetic fibre written information sheet.
- Videos on all construction types e.g. woven, knitted, non woven.

Additional links:

https://www.fairtrade.org.uk/media-centre/blog/top-10-facts-about-fairtrade-cotton/
https://www.bbc.co.uk/bitesize/guides/z6t26yc/revision/1
https://eco-age.com/resources/category/sustainability-stories/page/2/
https://www.fashionrevolution.org

Videos to watch

Good Ellen MacArthur Foundation video: https://www.youtube.com/watch?v=3iKHr-JnWYA
Water usage in clothing (SHOCKING statistics): https://www.theconsciouschallenge.org/ecologicalfootprintbibleoverview/water-clothing
Where does cotton come from? https://www.youtube.com/watch?v=VkiUnV8qxsI
Water and cotton
https://www.worldwildlife.org/videos/how-your-t-shirt-can-make-a-difference
Fairtrade and clothing
https://schools.fairtrade.org.uk/teaching-resources/unravelling-the-thread/

Dying fabric
Natural dying with food https://www.youtube.com/watch?v=p_tSuFJLZFs
leaf dying
https://www.youtube.com/watch?v=dgaTYLhEFZY

Cotton research:
Soil association summary of Organic Cotton benefits: **https://www.soilassociation.org/organic-living/fashion-textiles/organic-cotton/**

Extension articles:

Journal Nature on plastics in the Arctic: https://www.nature.com/articles/s41598-019-40311-4

Fashion and politics:
https://www.teenvogue.com/story/18-moments-when-fashion-and-politics-merged-in-the-last-decade.

https://www.theguardian.com/fashion/2020/apr/07/fast-fashion-speeding-toward-environmental-disaster-report-warns

Analysis of real impact of fashion chain's recycling policies:
https://www.reutersevents.com/sustainability/beyond-recycling-putting-brakes-fast-fashion

Fashion and water pollution -
https://www.reutersevents.com/sustainability/its-time-fashion-turn-its-focus-cat-walk-cutting-water-pollution

If you add resources please let us know: repairwhatyouwear@gmail.com.

Extension: Exploring cotton and polyester fibres/fabrics

Choose a piece of woven fabric in each fibre so you can experiment, cut

Characteristic	Cotton	Polyester
Explore the fibre's recovery from stretch. How do the fabrics stretch - why might they be different to one another? Cut an equal strip of each fabric and pin to a board. Have a measuring tape or ruler beside the fabric. Measure it, pull the fabric as hard as you can, let it relax and measure it again.	Original length Length after stretch	Original length Length after stretch
Crease fabric in your hands, what happens? Do the fabrics stay creased?		
Put water droplets on fabric, how many seconds does it take to absorb? This shows water repellency.	Seconds:	Seconds:
Iron a crease into the fabric then iron out again, is the crease permanent? Cotton should iron more or less flat again as it is a natural fibre. What happens to the polyester?		
Fill two glasses of hot water and wrap each in a different fabric. Take the temperature of the water initially and then again after 10 minutes or so. Is one better at insulating than the other?	Temperature of water after 10 mins 30 mins	Temperature of water after 10 mins 30 mins
Cut out equal size pieces of the fabrics and weigh them. Hang them over a cup of water and let about 1cm of the fabric dip into the water. Leave for 5 minutes then weigh them again. How much water do they absorb as a percentage of their weight?	Original weight Absorption weight	Original weight Absorption weight