



## Learn Skills – Waste Less

Get creative and redesign an old T shirt while exploring the impact our clothes have on the environment.

With <https://repairwhatyouwear.com/>

[repairwhatyouwear.com](https://repairwhatyouwear.com) aim is to encourage mending skills so that clothes are kept for longer and therefore waste is reduced. Also to provide understanding of the fibres and fabrics from which clothing is made, so 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.

### Suitable for Key Stage 2 - 3 England and Northern Ireland

#### **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:*

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## 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. Report by campaign group: <https://canopyplanet.org/campaigns/canopystyle/>
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. <https://www.salecycle.com/blog/featured/ecommerce-returns-2018-stats-trends/>
10. <https://www.weforum.org/agenda/2020/01/fashion-industry-carbon-unsustainable-environment-pollution/>

## Project brief.

Re-purpose an old t-shirt using hand sewing, dyeing and adding embellishments of polyester and buttons.

### Learning Intentions.

- Give an old piece of clothing a new look whilst also learning new skills
- Finding out all about the impact clothes have on our world.

### Before you create:

- It is important to have some background knowledge of the clothes manufacturing industry and the environment, so read the **fashion statistics** and discuss.
- You might like to watch some videos – there are some examples **in the start of the resources section.**
- Explore deeper by answering some **research questions.**

Students should think about the answers found to the questions, discuss and decide what message or image they would like to put on their t-shirt.

### Research Questions:

Questions can be researched as a group task or Individual.

[If individual work assigned, suggest: Level 2 research cotton only; Level 3 cotton + another question; Level 4 cotton, sending clothes to charity shops + another question].

1. Cotton 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?
  2. What is polyester made of? What other non-clothing products are similar? What makes people worry about the use of polyester in 50% of clothing?
  3. Industrial dyes are almost all chemical, what parts of the process of dyeing fabrics has the most damaging impact on the environment?
  4. When you send clothes to a charity shop, what percentage is actually sold? What happens to the rest?
  5. Create an instruction sheet/video on how to use a needle and thread. What benefits do you think that might these skills would have?
- **EXTENSION:** Create a resource to share exploring the history of slavery in cotton production and where slavery is still happening today. Historically slavery was connected to the cotton industry in the southern States of the USA. Today it is still present in Western China, Uzbekistan and Turkmenistan.

## Now Get Going!

### Brief:

**Level 2:** Redesign your T-shirt to make a statement about “Fashion and the Environment”.

**Level 3:** Redesign your T-shirt and use your research and skills to create a statement on “Fashion and the Environment”

**Level 4:** Using your research into cotton and polyester fibres and with knowledge of clothing manufacture’s impact on the environment, redesign your T-shirt to make a statement reflecting your response to “Fashion and the Environment”

### Skills you should use:

- Using Running stitch, Backstitch and Hemming stitch (or Cross stitch).
- Adding buttons.

### Skills you could use:

- Dying of cotton cloth.
- Polyester cloth manipulation.

### Gather together your materials:

- A used 100% cotton T shirt.
- Used polyester Ribbon/fabric/garment. This should be woven and fairly lightweight.
- Natural and synthetic dyes that work with cotton cloth.
- Needle, thread, scissors for hand sewing (both fine and embroidery threads).
- Assorted buttons and other accessories from used clothing.
- An iron, ironing board and silicon paper or 2 Teflon sheets. Pins. For ironing polyester ribbon and small pieces of fabric.
- An electric vegetable steamer for polyester manipulation on larger pieces of cloth.

### Optional:

- Masking tape, elastic bands, string for resist dying.
- 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.

## TASK SHEET: Fashion and the Environment.

Activity	KS 2	KS 3
<p><b>Design challenge.</b> Reflect on the research that you have done about the environmental impact of clothing. Think how you can use shape, texture, images and/or words to make your t-shirt a personal statement about this. Draw up your ideas and label.</p>	<p>D 1 D 2 E 1 E 2 E 3</p>	<p>D 1 D 2 D 3 D 4 D 5</p>
<p><b>Dying fabric.</b> Experiment with vegetable dyes on your cotton T shirt. You can paint, dip, immerse, print, wrap. Use a variety of different dyes.</p>	<p>Tech. M 1 M 2</p>	<p>Tech. M 1 M 2</p>
<p><b>Manipulating Polyester.</b> Experiment with samples of polyester fabric or polyester ribbon and reform them with heat. Either using the iron (ribbon) or a vegetable steamer (fabric samples) and following ideas from the tutorial in resources.</p>	<p>Tech. M 1 M 2 E 1 E 2 E 3</p>	<p>Tech. M 1 M 2 E 1 E 2 E 3 E 4</p>
<p><b>Decoration details.</b> Decide how you could use some polyester to decorate your garment and make a contrast to the cotton, thinking about why you are doing this and what it represents. Decorate your T shirt - include buttons, running stitch, backstitch and cross stitch (or herringbone). You could use stitches to put on your polyester decoration.</p>	<p>Tech. D 1 D 2 M 1 M 2</p>	<p>Tech. D 1 D 2 D 3 D 4 M 1 M 2</p>
<p><b>Activities to complete the project - after you've re-designed your t-shirt.</b> 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? Write up what you have learned about clothes and the environment and what we can do to keep wearing our clothes for longer.</p>	<p>E 1 E 2 E 3</p>	<p>E 1 E 2 E 3 E 4</p>

# Design and Technology Key stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

## Design

1. use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
2. generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

## Make

1. select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
2. select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

## Evaluate

1. investigate and analyse a range of existing products
2. evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
3. understand how key events and individuals in design and technology have helped shape the world

## Technical knowledge

1. apply their understanding of how to strengthen, stiffen and reinforce more complex structures
2. understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
3. understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
4. apply their understanding of computing to program, monitor and control their products

## Design and technology – key stage 3

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of domestic and local contexts [for example, the home, health, leisure and culture], and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion].

### Design

1. Use research and exploration, such as the study of different cultures, to identify and understand user needs
2. Identify and solve their own design problems and understand how to reformulate problems given to them
3. Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations
4. Use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses
5. Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools

### Make

1. Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture
2. Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties

### Evaluate

1. Analyse the work of past and present professionals and others to develop and broaden their understanding
2. Investigate new and emerging technologies
3. Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups
4. Understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists.

### Technical knowledge

1. Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
2. Understand how more advanced mechanical systems used in their products enable changes in movement and force
3. Understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]
4. Apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].

## Rights of the Child.

The following could be connected to Fashion and the Environment project:

article 3 (best interests of the child)

**The best interests of the child must be a top priority in all decisions and actions that affect children.**

*The future of the world resources and climate change affect children and fashion is an integral part of the increase in global Carbon Emissions. Children need to be educated in facts and learn the skills to cope with the future i.e. hand mending clothes skills, ability to understand and select best fabrics and sources for clothing.*

article 5 (parental guidance and a child's evolving capacities)

**Governments must respect the rights and responsibilities of parents and carers to provide guidance and direction to their child as they grow up, so that they fully enjoy their rights. This must be done in a way that recognises the child's increasing capacity to make their own choices.**

*This project educates children to understand the choices they make have environmental impacts. It presents facts and encourages investigation to form opinions and express these in both written and practical activities.*

article 12 (respect for the views of the child)

**Every child has the right to express their views, feelings and wishes in all matters affecting them, and to have their views considered and taken seriously. This right applies at all times, for example during immigration proceedings, housing decisions or the child's day-to-day home life.**

*This project is designed to encourage personal expression as a response to environmental facts and encourages expression of views and feelings in response. Clothing is integral to essential living and clothing choices not only affect the individual child but the future of their environment.*

article 13 (freedom of expression)

**Every child must be free to express their thoughts and opinions and to access all kinds of information, as long as it is within the law.**

*This project encourages experimentation, expression of opinion and development of thoughts in response to information.*

article 17 (access to information from the media)

**Every child has the right to reliable information from a variety of sources, and governments should encourage the media to provide information that children can understand. Governments must help protect children from materials that could harm them.**

*The references providing information for this project come from a wide range of reliable sources and are presented in ways in which children can learn and understand the context in which their clothing is produced and how this affects the environment of now and into the future. Safety and process are included in the activities, teaching safe working practices and introducing them to risk in a controlled environment.*

article 28 (right to education)

**Every child has the right to an education. Primary education must be free and different forms of secondary education must be available to every child. Discipline in schools must respect children's dignity and their rights. Richer countries must help poorer countries achieve this.**

*Children deserve to be educated in the production of fibres, fabrics and fashion to understand a global trade as well as the global environmental impact. Clothes are essential but lack of education and understanding is driving over consumption and increasing Global Carbon Output. Clothing has a social and environmental cost that impacts on the future of the next generation.*



## ***Resources for your project:***

Facts, links, PDFs of polyester manipulation. PDF of core sewing instructions and sewing tutorials on <https://repairwhatyouwear.com>

BBC bitesize is good for textile information: <https://www.bbc.co.uk/bitesize/guides/z6t26yc/revision/1>

Water usage in clothing (**including that T shirt - good for opening work**). <https://www.theconsciouschallenge.org/ecologicalfootprintbibleoverview/water-clothing>

Benefits of organic cotton <https://www.soilassociation.org/organic-living/fashion-textiles/organic-cotton/>

Eco-age and Fashion Revolution have great articles and resources.

<https://eco-age.com>

<https://www.fashionrevolution.org>

### **Videos to watch:**

A summary of the impact of fashion by MPs on the House of Commons Environmental Audit Select Committee. <https://houseofcommons.shorthandstories.com/sustainabilityinthefashionindustry/>

Cotton production and workers rights - a good all round video. Fairtrade foundation.

<https://schools.fairtrade.org.uk/teaching-resources/unravelling-the-thread/>

Organic cotton production: What is GOTS certified <https://www.youtube.com/watch?v=kOCXpSLHFmU>

Where does cotton come from?

USA mechanised production. <https://www.youtube.com/watch?v=VkiUnV8qxsI>

Water and cotton: <https://www.worldwildlife.org/videos/how-your-t-shirt-can-make-a-difference>

### **Dying fabric**

Natural Dyes: <https://www.fairtrade.org.uk/media-centre/blog/top-10-facts-about-fair-trade-cotton/>

Dylon Dyes (a dull video with instructions that are helpful): <https://www.youtube.com/watch?v=9017uB5jffE>

Lots of video tutorials for sewing, including threading a needle, how to sew on a button, backstitch and herringbone stitch

<https://repairwhatyouwear.com/core-mending-skills/>

If you add resources or have comments please email: [repairwhatyouwear@gmail.com](mailto:repairwhatyouwear@gmail.com)