



TEXTILES TECHNOLOGY

A scheme of work in seven lessons for Key Stage 3 Year 9 or Key Stage 4, with PowerPoint presentation

INTRODUCTION

This scheme of work provides an introduction to the use of renewables in textiles. It links to environmental concerns and sustainability, and raises awareness of organic growing and fair trade. The lesson plans encompass a range of teaching and learning strategies, and encourage students to think creatively, applying the skills and knowledge they have accumulated through discussion and research. The brief has been left open so students can suggest products that match the properties of the material. This relates to the requirements of the secondary curriculum, which recommends students should be given the opportunity to solve open-ended briefs. Alternatively the product could be stipulated and students asked to think which would be the most suitable renewable textile for that particular product.

This scheme can be taught as a stand-alone project with students demonstrating their creativity and enterprise skills through suggesting ideas but not having a practical outcome. Alternatively it could be linked to a design-and-make-it project where students apply their knowledge and skills to make a prototype. This concept also has the potential to link with other curriculum areas to deliver a cross-curricular theme.

Lesson plans show learning objectives, learning outcomes, strategy objectives and links to other curriculum areas. Homework has not been stipulated but the project lends itself to research by students both in the classroom and at home. The accompanying PowerPoint presentation introduces the lessons and provides starting points for discussion.

LESSON PLANS

	Strategy objectives	Learning objectives	Possible teaching activities	Learning outcomes	Differentiation
1	1 Stimulate ideas and inspiration for the project.	1 Introduce the idea of renewables. 2 Develop an enquiring mind. 3 Considerations when choosing products.	Starter Give students pictures of materials, or project onto board, and ask what they can be used for e.g. metal, plastic, flour, wood, cotton. Discuss where the material comes from and any problems associated with obtaining the material (This could be a matching game). This will lead to an explanation of the definition of renewable material. Ask students which of the materials are renewable and which can be used to make textile materials. Maize is an odd one out as it is a foodstuff. Main activity Explain the design brief then play The Renewable World game. Plenary Discussion of how they arrived at their decisions. Recap on definition of renewable material and any other terms they have come across.	1 Name the materials used to make products. 2 Definition and understanding of the term renewable. 3 Explanation of the decisions they have made in the game.	Starter Could give students the materials and ask them to think of objects that they are made into. Discussion of the materials could include properties of fabric.
2	1 Selecting information sources. 2 Gathering and sorting data that will help with ideas for, and decisions about, the design.	1 Carry out research into renewable materials in textiles.	Starter What am I made from? Quiz. Main activity Students carry out research into renewables using www.nnfcc.co.uk website. For each renewable material find out: How it's produced, properties, cost, where it can be bought. Some teacher input will be needed to explain what is meant by properties in textiles or stand-up bingo as explained in lesson 4 could be played here. It could lead to a discussion of dyeing fabric and an explanation that dyeing is generally an environmentally unfriendly process. Materials to research are hemp, flax, nettles (ramie), modal, lyocell (Tencel), cotton, bamboo, ingeo. Students could work in groups and research one renewable each. Plenary Students to report back their findings.	1 Use ICT to complete the questions about renewable textiles from website www.nnfcc.co.uk	Lower-ability students could be given a worksheet to complete. Higher-ability students could use other websites e.g. www.nettles.org.uk and www.dmu.ac.uk/faculties/art_and_design/research/team/sting/index.jsp . A lesson on natural dyeing could be incorporated here.

3	<p>1 Select information sources, gathering and sorting data that will help with ideas for, and decisions about, the design.</p> <p>2 Show an understanding of the impact of renewable textiles for the future.</p>	<p>1 Consider environmental issues in the production and use of renewable textiles.</p>	<p>Starter What does the term sustainable development mean?</p> <p>Main activity Students to consider the environmental impact of the renewable they are studying.</p> <p>Video about cotton production and fair trade. See www.fairtrade.org.uk -Sir Steve Redgrave clip. Students to write a report on the environmental impact of the renewable they are studying. Alternatively they could study a different renewable.</p> <p>Balanced information on the use of pesticides can be found at www.pesticideinformation.eu</p> <p>There is an interesting discussion on the meaning of sustainable in relation to cotton production at www.asa.org.uk/asa/adjudications/Public/TF_ADJ_44113.htm</p> <p>Plenary Students to report back their findings.</p>	<p>1 Understanding the terms sustainable development, fair trade, biodegradable</p> <p>2 Report on the environmental impact of a specific renewable textile product.</p>	<p>Alternatively this could be taught in the form of a debate, do people buy fair-trade products? Why, why not?</p> <p>Extension work. Students to calculate the 'miles' the product travels from field to shelf.</p>
4	<p>1 Select suitable materials according to purpose.</p> <p>2 Understand fibres have different properties.</p>	<p>1 Investigate the properties of the different fibres/fabrics.</p>	<p>Starter Stand up bingo. Students stand up and state a word to describe the fabric. If they can't think of a word or repeat a word they sit down. The winners are the ones left standing.</p> <p>Group work Examine fabric samples both renewable and traditional. Complete chart re properties of fabrics e.g. absorbency, strength, softness, creasing.</p> <p>Plenary Question students on their results e.g. which is the strongest fabric etc. Suggest products that the fabric would be most suitable for and explain why.</p>	<p>1 Use of descriptive words for textiles.</p> <p>2 Chart showing the properties of fibres.</p>	<p>Word banks available for lower-ability students.</p>
5	<p>1 Produce creative solutions. Be prepared to take risks. Envisage both common and</p>	<p>1 Develop creative and innovative ways of using the renewable fabric.</p>	<p>Starter Students in pairs or small groups to be given textile products and have to say what is the function of the product and what properties the fabric needs. Alternatively students could be shown products made out of the renewable and have to explain why the renewable was chosen over a traditional fibre.</p> <p>Activity Students to think of creative ways of using the</p>	<p>1 Annotated design ideas.</p> <p>2 Creativity and explanation of designs based on knowledge</p>	<p>Case studies of technical textiles could be presented here to encourage students to think creatively.</p>

	unusual possibilities		renewable fibres and develop designs. Prompt cards to be given to the groups.	and research.	
6 7	1 Critically analyse the information gathered.	1 Sell the concept of a renewable fibre to a textile company.	Activity Students to launch a campaign to persuade a textile company to use their product. Prepare a presentation to sell the renewable to the company (may be presented using media of their choice e.g. drawings or PowerPoint, poster, film etc) Plenary Groups to present their work.	1 Presentation to promote and sell a renewable textile.	Develop a business plan to accompany the presentation.

ADDITIONAL RESOURCES

PRACTICAL PROJECTS

The projects selected below could link with an environmental theme thereby encouraging students to consider the concepts introduced by the Renewable World game. However it may also be possible to adapt an existing scheme you use in school to incorporate learning about renewables.

All these suggested projects could also encompass sustainability whereby students are encouraged to reuse, reduce and recycle. For example:

- students could have a budget and be limited as to the amount of material they are allowed to use for their product
- when cutting out fabric they could consider layout planning to avoid waste
- recycling materials could be encouraged by incorporating reclaimed items from soft furnishing and clothing e.g. buttons, beads, or fabric which could be appliquéd on or adapted in conjunction with using a renewable.

It may not be cost effective or practical to use the renewable material for making the final outcome but students could make a prototype using a cheaper material and explain the choice of renewable through their design work

In all projects, students could either work individually to design and make a product, or they could focus on planning and quality control and batch produce their product as a team. A competitive element could be introduced with a prize for the best design and/or outcome. If a local business was prepared to work with the students a 'real life' dimension could be incorporated.

I DESIGN AND MAKE AN ECO-BAG

With retailers discouraging the use of plastic carrier bags and encouraging consumers to reuse textile-based bags this project would be relevant to today's society and allow scope for progression. Students could research the reasons behind the trend away from plastic

carrier bags and carry out a product analysis on existing eco-bags. This would stimulate ideas and enable students to apply their knowledge to write a specification. Students could then design their own eco-bag, make it and evaluate the results. Bags could range from a simple bag constructed from two pieces sewn together to the more complex bag with a gusset and inserts to compartmentalise the bag hence making it 3D. The construction of handles could vary in difficulty allowing for differentiation. Designs could be applied to the bag and this would lend itself to introducing issues relating to dyeing (students could look at natural dyes and synthetics and learn about why dyeing can be an environmentally unfriendly process). Embellishment of the bag to make it aesthetically pleasing can include many skills of appliqué, printing, fabric crayoning, embroidery etc.

2 DESIGN AND MAKE A CUSHION WITH A THEME RELATING TO THE ENVIRONMENT

This is a popular textiles project already carried out in schools, which could easily be adapted to include renewable textiles. Skills of embellishment can be taught through this project, and students could design and make in a similar format to the bag project.

3 DESIGN AND MAKE AN ITEM OF CLOTHING FOR A RETAIL OUTLET SPECIALISING IN ECO CLOTHES E.G. MUJI

If you have a local shop specialising in eco-clothing it would be relevant to see if they would work with the students. A competitive element could be introduced with the shop setting a design brief. Clothes could be modelled in a local fashion show adding another motivational dimension to the project. Making a prototype out of calico would emulate making a toile in the fashion industry.

POWERPOINT PRESENTATION

This is available in Teachers' Resources as a separate file.

CURRICULUM LINKS

Lesson 1

Citizenship, Design & Technology, ICT, Maths, Science

Lesson 2

Design and Technology material areas, ICT, Science

Lesson 3

Citizenship, Design and Technology, Geography, Science

Lesson 4 and 5

Science, Design and Technology

Lesson 6 and 7

Business, Design and Technology (graphics), enterprise, ICT, Maths