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# Malvern Hills Repair Café: Education Pack

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**Overview:** A cross-curricular resource for Key Stage 2.

This set of lesson plans introduces the much-overlooked theme of **repair** as part of:

- A whole-school approach to **Learning for Sustainability**, **Sustainable Schools** and **Eco Schools**
- An introduction to teaching a range of key **life skills** with important links to personal and wider health and safety.

## Objectives:

These lesson plans will:

- Introduce the meaning / concept of repair as part of a continuum starting with maintenance and care – through to repair (and beyond)
- Explore the personal implications and the wider **social**, **environmental** and **economic** aspects of this concept
- Make links to wider **global** themes and issues
- Be practical and “hands-on” where relevant
- Tie in with the **Primary National Curriculum**
- Offer opportunities for building this theme into a **whole school approach** that will include links with the wider community.

## Lesson Plans. 45 mins – 1 hour in length:

NB - lesson may take longer if activities generate discussion!

These lesson plans will in most cases employ the following structure:

- Introductory activity or “hook” – with a whole class focus
- Main / longer activity – with group or individual work focus
- Close - a more reflective activity - more likely to involve either individual work or plenary / sharing with the whole class

## Curriculum links / adaptability:

These lesson plans are designed for the upper stages of Key Stage 2, specifically for Years 5 and 6, but are highly adaptable for younger children in Key Stage 2 and up into Key Stage 3. Ideally this resource can be embedded into a themed curriculum plan, or be used as part of a day or week with a specific focus.

## Health and Safety:

All these lesson plans have been through a careful risk assessment, and have been assessed for health and safety implications. It is the recommendation of this lesson pack that **NO MAINS POWERED** electrical equipment is brought in for any of the lessons. See Appendix 1

## Materials:

Each lesson plan will introduce the key materials necessary for the delivery of the lesson in this space. These will be low cost / no cost for the most part. The pack also gives access to:

- Photographs
- Lesson worksheets
- Some items for repair

**These are available from the Malvern Hills Repair Café:**  
[themaalvernhillsrepaircafe@gmail.com](mailto:themaalvernhillsrepaircafe@gmail.com)

## Other Resources:

An amazing range of resources are available on-line through other significant organisations offering educational support in this area. The links to these organisations and specific web-pages will be highlighted throughout this resource in this section of each page.

Important organisations for this work include:

Practical Action

[www.practicalaction.org/schools](http://www.practicalaction.org/schools)

Oxfam

[www.oxfam.org.uk/education](http://www.oxfam.org.uk/education)

Waste Buster

[www.wastebuster.co.uk/universe](http://www.wastebuster.co.uk/universe)

WRAP (Waste Resources Action Programme)

<http://www.wrap.org.uk>  
<http://www.wrap.org.uk/sustainable-textiles>

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# Preparation:

What you will need to do before you start?

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## Building a whole school approach:

The lessons in this Education Pack work best when delivered together, building a broad understanding of the context and need for care and repair, alongside an introduction to some of the skills and opportunities for the children to share their thoughts and experiences with a wider audience.

The pack will offer exciting and productive experiences for work with:

- The school's **Eco Schools Committee / Action Team**
- The **School Council**
- Local organisations and community groups.

## First steps:

### Setting the scene:

In order to get the most from this programme, the Eco Committee, School Council and lead members of staff have the opportunity to work together to put a date in the school diary, ideally one that coincides with a school fair, parent's evening etc. as an occasion where the school may invite experts from the local Repair Café (or similar), to come in and help the children host a Repair Café in the school. This would be a chance for:

- Parents and members of the local community to bring in items for repair or to receive advice on what is / is not possible
- Workshop delivery on maintenance and repair that can be run for children and their parents **together** (e.g. bicycle maintenance)
- Children from classes involved in the programme alongside the Eco Committee / School Council, to share ideas / information etc. through leaflets / posters / presentations / short drama sketches etc.

## Gathering the necessary materials for the programme:

The activities in these lesson plans will require collection of certain key materials on which the children can practice new skills (see in column to the right), or items on which they can experiment with disassembly / reassembly. Some of these items may be available from your local Repair Café, but others could be sourced through the parents, local community and local Scrapstore – such as the Worcestershire Resource Exchange (WRE).

### For the lessons you will also need to gather certain key tools:

- Sewing kits
- Allen keys
- Screwdrivers – Philips, Flat head and posidrive
- Spanners - adjustable

## Material Needed:

- Scraps of material – ideally of a set size (e.g. 10 x 10cm)
  - Cotton, denim or other material for stitching / patching / button sewing
  - Wool or Hessian for darning
- Buttons
- Needles (including darning)
- Thread (including embroidery thread)
- Old items of clothing which can be repaired

## Other key items:

- Tools – screwdrivers / Allen keys
- Old damaged toys
- Old, unwanted, battery powered items, e.g. old radio or old cordless telephone handsets (not mobile), modems / routers – **all less than 9 V.**

## Local Support:

Important organisations for supporting this work include:

- Malvern Hills Repair Café

<http://www.malvernhillrepaircafe.co.uk>

<https://www.facebook.com/MalvernHillsRepairCafe/>

- WRE

<http://www.wre.uk.com>

## Some key web-sites for repair:

[www.ifixit.com](http://www.ifixit.com)

[www.wikihow.com](http://www.wikihow.com)

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# Curriculum links:

A few connections.

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## English:

### Spoken Language:

These lessons are particularly designed to meet statutory requirements for spoken language, with specific opportunities to engage at a variety of different levels.

### Writing:

Each lesson includes a session where the children are asked to discuss and quickly note or annotate their ideas. These activities can either be scribed by a member of their group or written individually for later sharing / discussion.

These initial notes are to form the basis of follow-up writing for a range of audiences. The follow up writing may take the form of a leaflet, postcard, piece of persuasive writing, letter etc. – i.e. a range of possible applications required by the National Curriculum. Evaluation and feedback from their group and / or the rest of the class on these texts will be important, given that many are for sharing with the wider community.

### Reading:

Most lessons include links to web-sites that encourage and facilitate research of the theme being explored. The children should be encouraged to use these and text-books or other material where this is available.

## Science:

### Materials:

The lessons introduce different areas of focus, which lend themselves towards a consideration of different key materials, e.g. repairing textiles such as cotton and wool, or careful maintenance / re-use of items made of metals such as steel and aluminium.

### Electricity:

Lessons 7 & 8 specifically follow on the introduction of electrical items in our homes / classrooms etc. and electrical circuits. The Health and Safety elements to these lessons are particularly important for **lifelong learning**.

## D&T:

Whilst the lessons here do not involve the design of something new, they do encourage:

- Identification and use of appropriate tools
- Annotated sketches
- Generation of ideas through discussion and the communication of these ideas through annotated sketches, exploded diagrams etc.
- Use of a range of everyday materials
- Evaluation of their work; process and product.

## Geography:

The lessons place considerable emphasis on either global themes or global understanding. The sourcing of raw materials is a key theme – building a firm understanding of where key materials such as cotton and metal ores come from. The use of world maps as follow up work is designed to consolidate this understanding of natural resources, trade links and the importance of water required at this Key Stage.

## History:

Lesson 4 specifically introduces World War II as a theme in British history to extend the pupils' knowledge and build understanding around the Make Do and Mend response to wartime shortage and rationing – a repair theme that has stayed with us for over half a century. Ironically the second world war marks a huge turning point in the use of global resources and spread of industrialization.

# Lesson 1:

## What is repair?

### Overview & Objectives:

This introductory lesson starts with thinking about what repair means, how it is part of caring for things that we have, use, wear and love, and part of prolonging future use. Key words / concepts to introduce:

#### Care

#### Maintenance

#### Repair

**Repair:** *restore something damaged, faulty or worn to a good condition*  
(Oxford English Dictionary)

This lesson will:

- Introduce the concept of repair
- Offer opportunities for discussion, notation, reflective writing (various contexts)

### Activity:

#### Preparation:

- Make sure the children are sitting at tables - in groups of 4-5.

#### Introduction / Hook:

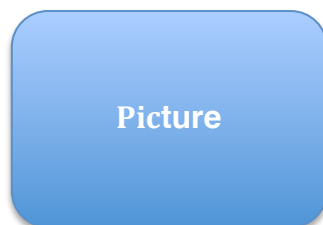
- Ask the class, “Have you ever had something that you liked to use, play with, or wear, that was damaged, broken, or stopped working?”
- Ask the children to talk about this in pairs or groups of three (give them 90 seconds) and then ask for feedback. Collect these ideas on whiteboard / large sheet of paper.

#### Main activity:

Hand out the pictures, one for each group / table, and ask them to stick their picture in the centre of a large sheet of paper. Then ask the questions below, making sure to:

- Give them 2 minutes to discuss each question (1-4 below)
- Ask them to use a different colour pen for each question to note down their key words / ideas (to aid feedback later).

1. What can you see in this picture?



3. What do you think will happen next?

2. What is the problem?

4. What are the choices?

After the children have annotated their sheet, ask them to feedback to the class – showing the picture and working through the points they have made for each question.

### Materials:

The following are the key resources for this lesson:

- Large sheets of paper
- Marker / felt tip pens (at least 4 colours) for each table
- Photographs for this lesson
- Pens / Pencils

### Follow Up Activities:

1. Watch and discuss the short introductory film *Worn Wear Stories* by Patagonia clothing company:  
<http://www.patagonia.com/eu/enGB/common-threads/>
2. Write the story of what happened to the thing you had that was worn, / damaged or broken. Where did it come from? How did you use it? What happened in the end?
3. Choose one of the photographs and tell the story behind this picture? Who was the owner? What happened to explain why the picture is as it is.....(or see the Follow Up sheet for Lesson 2)
4. Write and draw a postcard sent from one of the people introduced in the *Worn Wear* film clip – explaining why old equipment / clothing is so cool and important to them.....

# Lesson 2:

## Where did it come from / where does it go to?

### Overview & Objectives:

This lesson starts to explore some of the wider **social, environmental** and **economic** aspects linked to repair. It builds on the idea that much of our “stuff”, ultimately:

1. Comes from a hole in the ground or a field.....
2. Passes through a factory or two
3. Travels huge distances
4. Is sold to us
5. Is used by us
6. Is thrown away and ends up in land-fill.

This is described as a “**linear system**” and is hugely wasteful of the resources involved, fuel, labour etc. Much of our “stuff” could be maintained and repaired to prolong its life and some companies are beginning to explore this - moving towards a more “**circular economy**”.

This lesson will:

- Introduce thinking and questioning around the sourcing & use of raw materials in a global context.

### Activity:

#### Preparation:

- Make sure the children are sitting at tables - in groups of 4-5.

#### Introduction / Hook:

- Introduce a piece of worn clothing (or use photographs from Lesson 1)
- Have a class discussion, noting the children’s answers:  
What is it made from?      Where do these things come from?  
Who made it?              How far away is the factory?  
How long has it been worn for?      What will happen to it next?

#### Main activity:

##### PART A

- Introduce “Mysteries Worksheets – Part A” for this lesson – one for each group. The statements need to be cut out as strips.
- Ask the children to sort these **into a line** as a group – with a beginning and end and ask the children to read these out
- Use a world map to trace each story.

##### PART B

- Introduce the short film from Patagonia clothing company, *Worn Wear* - **from 9.16 mins – 11.50 mins**  
<http://www.patagonia.com/eu/enGB/common-threads/>  
Discuss.

##### PART C

- Introduce the “Mysteries Worksheets – Part B” - statements that can be added into the two stories from Part A. Can the statements be arranged into a **circular pattern**? Do we still need the landfill card?

### Materials:

The following are the key resources for this lesson:

- Mystery sheets parts A & B
- Scissors and glue sticks
- Photographs for this lesson
- Follow up worksheets

### Other Resources:

*The Story of Stuff* - official film:


<http://storyofstuff.org/movies/story-of-stuff/>

### Follow Up Activities:

Remind the children of their discussions in Lesson 1. Hand out **Follow Up sheet** for Lesson 2. Ask the children to choose either their item that was damaged – or one of items in the photographs and complete the sheet, including the BEFORE and AFTER bubbles.

Encourage more research on where things come from. A useful resource is the following web-site, which gives you and the class the opportunity to find out which countries import and export certain key resources. This gives the class an important opportunity to consider the journeys their items have made....

<http://atlas.media.mit.edu/en/>

Use the small **search** icon – the magnifying glass to get started... 

# Lesson 3:

## *Make do and Mend – Darn it!*



A Cross Curricular Resource - KS 2

### Overview & Objectives:

This lesson builds on Lesson 2 and explores the idea of repair from the perspective of the experiences of people during the Second World War and makes direct reference to the resources available through the Imperial War Museum and the original *Make Do and Mend* book.

This lesson will:

- Link directly to a specific theme in British history – WWII and role of *Make Do and Mend* as a vital part of the war effort.

### Activity:

#### Preparation:

- Make sure the children are sitting at tables - in groups of 4-5
- For a whole class session, ideally you will need a TA and / or adult volunteers to help at each table. Alternatively this could be introduced at a whole class level and then one group could work on the practical darning whilst the others complete the map (follow up).

#### Introduction / Hook:

- Take a look at the photographs clothing & people during WW2 in these links (ask the children to note their thoughts for the points below):  
<http://www.iwm.org.uk/collections/item/object/205200381>  
<http://www.iwm.org.uk/collections/item/object/205198394>  
<http://www.iwm.org.uk/collections/item/object/30094415>
- What materials do you think the clothes are made out of?
- What do we know about where these materials come from?
- Referring to a world map, with Britain under a blockade from German U-Boats – would importing wool / cotton be easy?
- Which clothes would have been the most important during war-time?

#### Main activity:

##### PART A – Discuss the following:

- Even though Britain did produce its own wool, most would have been imported from the Empire and former colonies like Australia
- Wool was vital material for soldiers uniforms & civilians clothes
- Not only was wool scarce, factory production was focused on producing weapons, ammunition, aircraft – and uniforms...
- Darning, mending and re-using cloth would have been vital skills.

##### PART B

- Take a 10x 10cm piece of wool or hessian with a hole in the centre
- Take a darning needle and thread 30-40 cm of woolen thread through the eye. We recommend using a different colour thread when learning. It helps see what you are doing and can look cool!
- Use **Lesson 3 Guide Sheet** to help you to darn the hole. This is based on the original *Make do and Mend* pages from the 1940s.

See *Make do and Mend* in reference section at the end of this pack.

### Materials:

The following are the key resources for this lesson:

- Guide Sheet & Follow up sheet
- 10 x 10cm wool or hessian patches with holes in the middle
- Darning needles & darning mushroom or old tea-up
- Wool

### Other Resources:

Other important information from the Imperial War Museum:

<http://www.iwm.org.uk/history/10-top-tips-for-wini-make-do-and-mend>

<http://www.iwm.org.uk/history/how-clothes-ration-affected-fashion-in-the-second-world-war>

<http://www.iwm.org.uk/history/8-facts-about-rationing-in-britain-during-the-second-world>

### Useful Darning Guides:

Ifixit – working with Patagonia:

<https://www.ifixit.com/Guide/How+to+Darn+a+Hole+in+a+Knitted+Garment/27415>

### Other guides:

<http://www.theguardian.com/lifeandstyle/2014/sep/22/how-to-mend-moth-holes>

### Follow Up Activities:

Worksheet for Lesson 3. Ask the children to complete the map to show where wool and cotton come from and show the main areas of threat during the *Battle for the Atlantic*, see this BBC site for more information:

[http://www.bbc.co.uk/history/worldwars/wwtwo/battle\\_atlantic\\_01.shtml](http://www.bbc.co.uk/history/worldwars/wwtwo/battle_atlantic_01.shtml)

# Lesson 4:

A stitch in time.....a drop in the bucket....

## Overview & Objectives:

Every year £140 million worth of clothes – around 350,000 tonnes of clothing goes into landfill in the UK (source WRAP). The production of clothing uses huge amounts of energy in its manufacture (creating CO<sub>2</sub> emissions), as well as using millions of litres of water (it takes 2700 litres to make 1 T-shirt).

This lesson will:

- Link to the Geography curriculum and the nature of water as a vital resource.

## Activity:

### Preparation:

- Make sure the children are sitting at tables - in groups of 4-5
- For a whole class session, ideally you will need a TA and an adult volunteers to help at each table.

### Introduction / Hook:

Watch the National Geographic / WWF film linked to water footprint of a T-shirt (discuss in groups and mind map thoughts):

<https://www.youtube.com/watch?v=xEEExMcyjSkwA>

### Main activity:

Remind the class of the work they did in Lesson 2. Introduce a focus on denim (heavy cotton). To make a pair of jeans weighing 800g – 8000 litres of water is needed. Introduce a heavily worn pair of jeans (or photo).

### PART A

Watch the clip from Levis – one of the largest manufacturers of jeans - (or use the Wikihow link at the bottom of this page):

[http://www.levi.co.uk/US/en\\_US/customize/repair-your-favorites](http://www.levi.co.uk/US/en_US/customize/repair-your-favorites)

### PART B

- Take a 10 x 10cm piece of denim or cloth with a hole in the centre
- Take a needle and thread 30 cm of cotton thread through the eye. We recommend using a different colour thread when learning. It helps to see what you are doing and can look cool!
- Use a different colour piece of material to go under the hole and practice stitching around the hole using a simple stitch (see <http://www.dmc-usa.com/Education/How-To/Learn-the-Stitches/Embroidery-Stitches.aspx> (use running, back or cross stitch) or use this guide <http://www.wikihow.com/Fix-Ripped-Jeans>



## Materials:

The following are the key resources for this lesson:

- Worksheet
- 10 x 10cm cotton or denim patches with holes in the middle
- Other scraps of material
- Needles
- Cotton thread

## Follow Up Activities:

Lesson 4 Follow-up Sheet 1, plus these links offer great starting points:

Oxfam's work on cotton:

<http://www.oxfam.org.uk/education/resources/the-clothes-line>

A clip on the value of water:

<http://www.theguardian.com/commentisfree/may/29/wasting-water-luxury-shortage-for-people>

A fascinating resource to look at the water footprint of products:

<http://waterfootprint.org/en/resources/intro-tools/product-gallery/>

## Did you know?

Some companies are working hard to encourage people to look after their clothes and give them a long life. Patagonia make a promise that they will fix or replace clothing where something goes wrong – they repair 40,000 items a year in North America.

You could stitch all of the squares together from this activity and the last lesson to make a wall hanging or quilt.....

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# Lesson 5:

## Toy Stories..... The toy repair challenge...

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A Cross Curricular Resource - KS 2

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### Overview & Objectives:

You may know the story of Woody the cowboy in the Toy Story films? A simple tear could mean the end for him and Andy in Toy Story 2, and there are other films and stories that bring in the theme of repair. Another good example is *Threadbear* by Mick Inkpen (see reference section).

This lesson will:

- Tie in with the D&T curriculum, considering responses to the repair of a favorite toy (including annotated sketches etc.).

### Activity:

#### Preparation:

- **THE CHILDREN WILL IDEALLY HAVE BROUGHT IN AN OLD / DAMAGED TOY** – that they want to repair. Not electrical or battery powered.
- Make sure the children are sitting at tables - in groups of 4-5

#### Introduction / Hook:

Read *Threadbear* / or watch the introduction to *Toys Story 2*...

#### Main activity:

This lesson is all about generating the children's curiosity and creativity. Explain that there are a whole range of quick / simple fixes that can be done with needle and thread, tape or glue.

#### PART A

- As the children to draw their toy and list the things that are wrong with it – annotating the drawing (make notes around the drawing with arrows).
- If they do not have a toy – they could draw the picture of *Threadbear* or use a photograph from Lesson 1
- In a different colour pen, note the repairs they will need to make and the materials they will need.

#### PART B

- Repair their toy using needle and thread, tape or glue.
- If they do not have a toy – practicing embroidering or using felt (with glue) for eyes, nose and mouth on a piece of fabric – this will develop skills
- Review the success or difficulty of these simple fixes. Did they all work? Will they last?
- Add the notes on this review to the sketch in a different colour.

### Materials:

The following are the key resources for this lesson:

- School glue: If your school Design and Technology cupboard has hot glue guns – they may also be helpful
- School approved tape
- Needle and thread (including embroidery thread)
- Scraps of material

### Other Resources:

A very useful guide to mending eyes on toys is:

<http://www.sewmamasew.com/2015/03/cute-options-for-toy-eyes/>

Important Health and Safety note:

**Buttons are now considered a danger because they can come off and be a choking hazard for your children (under 3). This is worth explaining to the school.**

### Follow Up Activities:

- Plan an assembly on *Threadbear* or Toy Story 2 and what you know about repair so far for the rest of the school.
- Visit Tinkercad's CAD website. Are there any things we could design using this platform for our toys?

<https://www.tinkercad.com>



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# Lesson 6:

## Can I repair it? Choices...choices.....

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A Cross Curricular Resource - KS 2

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### Overview & Objectives:

The most common things brought to our Repair Cafes are electrical items like toasters and kettles. Sadly, most of these items cannot be fixed because of the way they have been designed. Most of the televisions in the photographs for Lesson 1 worked or had a minor fault – but were still thrown out.

How important is it that we can repair stuff? The response from most people when they encounter problems is to dump the old and buy something new. Only a small amount is re-used or recycled. A trip to a local waste and recycling site will often show how busy they are with electrical goods like TVs being thrown out – especially before and after Christmas.

This lesson will:

- Consider the key choices people make in deciding what they buy – highlighting key criteria important in Design and Technology.

### Activity:

#### Preparation:

- Make sure the children are sitting at tables - in groups of 4-5

#### Introduction / Hook:

Hold up an **old** mobile phone / smart phone. Discuss pros and cons.

#### Main activity:

Give a copy of the nine key words / statements (and definitions) relating to our choices when buying “stuff” to each group (Lesson 6 Worksheet 1)

#### PART A

- Ask the children to read these nine cards
- Ask them to arrange them as a Diamond 9 – ranking the most important on top with the least important on the bottom (use Worksheet 2 to help them place the cards).

#### PART B

- Ask the children to feed back on their choices and explain what they thought was the most important.
- Where did “Can I repair it?” come on their list?
- What were the reasons for this? Conduct a short class **debate**...
- Ask the class to write up their choices stating clearly why they chose their top three

#### PART C:

- Go to the Follow Up activity – see in right column...

### Materials:

The following are the key resources for this lesson:

- Worksheets
- An old mobile phone

### Other Resources:

This is a hugely important and useful BBC report on mobile phone use, repair and recycling and the dangers involved – with a global perspective. Many of our second hand mobile phones go to Africa and other parts of the developing world.

<http://www.bbc.co.uk/news/business-29840110>

### Follow Up Activities:

After showing the film clip above, revisit the 9 choices activity. Ask the children to sort again – has watching the film changed their minds?

Ask them to write about this as a reflective piece of writing.

### Wastebuster and The Pod follow up:

Further work on Waste Electrical Equipment:

<http://www.wastebuster.co.uk/teachers-bin/lessons-and-activities/featured-resources/weee-resources>

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# Lesson 7:

Electrical items - what to look out for and stay safe..

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## Overview & Objectives:

As we learned in the previous lesson, many of the items coming to the Repair Café are electrical items. For a few items, particularly toasters and kettles, there is nothing that can be done (“planned obsolescence”), but for many others, there is a solution with the help of our Repair Café experts. Electricity from the “mains” (230-240V) – is extremely dangerous, and a direct shock would kill you. Being able to identify the dangers is a big part of knowing when to take something for repair. This ties in directly to advice from the Fire Brigade.

This lesson will:

- Link to the Science curriculum focusing on electrical items in the home, electrical circuits and electrical safety.

## Activity:

### Preparation:

- This lesson should follow KS 2 work on electrical circuits
- Make sure the children are sitting at tables - in groups of 4-5
- This lesson would work well in the school IT classroom or with school laptops.

### Introduction / Hook:

Do you remember the work we have done on circuits?  
What have we learned about electrical safety so far?  
Give a copy of the photographs for this lesson to each group;  
Includes - Cable (chewed) Cable broken (wear) plug (bad wiring) plug (bad connection) lightbulb (blown) faulty computer (software or hardware)

### Main activity:

#### PART A

- Ask the children to look at the photographs and discuss what the problem might be?
- Give out the cards provided which list the possible causes.
- Can we match the photo with the cause? Discuss

#### PART B

- Visit *Switched on Kids* website and work through the page - either as a class or as an IT session  
<http://www.switchedonkids.org.uk>
- Ask the children to design a safety leaflet for their own homes, illustrated and listing the main issues
- The Fire Service do offer home fire safety checks:  
<http://www.fireservice.co.uk/safety/hfsc>

## Materials:

The following are the key resources for this lesson:

- Photographs
- Worksheets
- An example of faulty wiring if you have one or from your local Repair Café.

## Follow Up Activities:

Fire safety is a vital life skill. Visit the following web page from **Electrical Safety First** with the children:

<http://www.electricalsafetyfirst.org.uk/guides-and-advice/electrical-items/>

Ask the children to choose 1 item and research the risks and advice.

Ask them to design a poster or leaflet to share this advice.

Ideally organize the children so that they cover the most everyday items on the list (chargers, plugs etc.).

A blue rounded rectangular box with a drop shadow containing the text "REITERATE - WE MUST NOT OPEN OR TAMPER WITH PLUGS" in white capital letters.

REITERATE -  
WE MUST  
NOT OPEN  
OR TAMPER  
WITH PLUGS

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# Lesson 8:

Taking it apart and putting it back together....

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A Cross Curricular Resource - KS 2

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## Overview & Objectives:

We know from our Repair Café experts that one of the biggest skills in the world of repair is knowing how to take something apart and put it back together again. It sounds so simple and obvious – but there are some really important steps that make it easier and will really help you develop your skills and understanding.

This lesson will:

- Link to the Science curriculum focusing on electrical items in the home, electrical circuits and electrical safety
- Offer opportunities to draw annotated sketches / diagrams (D&T).

## Activity:

### Preparation:

- This lesson builds on the work we did in Lesson 5
- This lesson works best as a class introduction followed by group work – in groups of 4-5. You may not have enough items or class support for them to all to work on this at once – which might mean that you have one group at a time doing the main part of the lesson.

### Introduction / Hook:

Take an old radio / item brought in (see opposite) – that does not work. Turn it on and off – make sure the children can see / hear that it isn't working. Discuss.

How they could find out what is wrong? Can we open it? Where are the screws? What kind of screwdriver / key does it need (show the different kinds (Flat head, Philips, Posidrive and Allen Keys)?

### MAIN ACTIVITY:

#### PART A

- Ask the children to draw the radio – and label where the screws are, i.e. annotate. They might need to draw front / back / sides / bottom..
- Give out the screwdrivers. Can they carefully remove the screws?
- Tape them to the paper where you have drawn them with masking tape
- Where is the battery? Follow the same steps as above.

#### PART B

- Draw what is inside and label what they can see.
- Can they remove anything else? Follow the same steps as above.
- You might need two or three bits of paper or use an “exploded diagram”.

#### PART C:

- Put everything back together again – using your pictures to help.

## Materials:

The following are the key resources for this lesson:

- An old radio(s) / simple electrical items from home / your Repair Café:
  - Battery powered toys
  - Cordless telephone handsets / bike lights...
- Paper / pencils / masking tape
- Screwdrivers (Phillips / Flat Head – likely to need small size)
- Allen keys

## Follow Up Activities:

Have a look at some Repair Manuals for other more complicated things.

The Haynes Car Repair and Maintenance manuals are very interesting – because of the ways they show the steps in taking different parts of the car apart – showing every single piece – from the largest to the smallest.

<https://haynes.co.uk/catalog/manuals-online>

The Heynes web-site also has instructional videos. It might be useful to show the children one (for example the one on replacing break pads), because it shows the way that repair is part of a vitally important area of work – car repair & maintenance!

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# Lesson 9:

## Moving stories – bike, scoot and skate....

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A Cross Curricular Resource - KS 2

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### Overview & Objectives:

Following on from the previous lesson it is time we looked at bikes and skateboards – some of our favorite and most sustainable forms of transport (other than walking!).

This lesson will:

- Offer opportunities for discussion around global connections, use of raw materials, trade links and introduce vital maintenance skills.

### Activity:

#### Preparation:

- This lesson builds on the work we did in Lesson 8
- This lesson works best as a class introduction followed by group work – in groups of 4-5
- Ideally you might want a cycling / scooter / skateboarding enthusiast to help with this lesson, either a fellow member of staff or a local parent, volunteer or someone from a local bicycle / skate shop.

#### Introduction / Hook:

Take a look at a bicycle, scooter or skateboard and the photographs of two of these items (from Lesson 1).

Introduce the mysteries for this lesson. Ask the children to see if they can order the story (Part A) in the right sequence. Then add the three remaining (Part B) strips and see what happens. Discuss.

#### MAIN ACTIVITY:

##### PART A

- Introduce a **bicycle** and / or **scooter** and / or **skateboard**
- Ask the children to draw one of these
- Ask them to label (annotate) the different parts and what they think needs to be done to maintain or repair them.

##### PART B – Bike focus:

- Show them how to pump up a tyre – this will include an introduction to the different valve options (Shrada or Pesta) – see to right of page
- Show how to put a small amount of oil / lube onto the chain
- Show how to check their brakes – if they are loose or not working – it's time to go to the bike shop.

##### PART B – Skateboard / Scooter focus:

- Show the children how to check over the skateboard or scooter
- Try a web search for *SkateXS skateboard maintenance for beginners* - some good ideas – for link see page 17
- <http://www.micro-scooters.co.uk/scootermaintenance>

**PART C** – finish annotating the drawings with what they have learned.

### Materials:

The following are the key resources for this lesson:

- Mystery sheets A and B
- An old skateboard with removable trucks / scooter / bicycle from the children or from your local Repair Café:
- A set of Allen Keys
- Screwdrivers
- Adjustable spanner
- A bicycle pump with a choice of valves
- Bicycle oil / lube

### Useful references:

Bike projects:

<http://www.bikehub.co.uk/featured-articles/recycling/>

<http://www.thebikestation.org.uk/glasgow/>

Ifixit guide to skateboard repair:

<https://www.ifixit.com/Guide/Skateboard+Skateboard+Trucks+Replacement/11227>

Guide to Presta and Shrader Valves and pumping a bike tyre:

<https://roadcyclinguk.com/how-to/maintenance/beginners-guide-how-to-pump-up-a-road-bike-tyre.html#tXv2owvUDw1iRcOm.97>

Story about wasted bikes:

<http://www.dailymail.co.uk/news/article-3321364/Tesco-dumps-4-000-worth-bikes-skip-despite-company-bosses-assurances-cutting-waste-donating-charity.html>

# Lesson 10:

Sharing it.....



A Cross Curricular Resource - KS 2

## Overview & Objectives:

This is the final lesson in this series, and yet it may be one of the most important. Over the past 9 lessons we have looked at the theme of repair from a variety of perspectives. It is important to give the children a chance to reflect on the lessons and what they feel they have learned and gained.

This lesson will:

- Offer a wide variety of contexts for writing, with finished pieces directed at a range of key audiences.

## Activity:

### Preparation:

- This lesson works best as a class introduction followed by group work – in groups of 4-5

### Introduction / Hook:

Talk about the lessons that they have experienced around the theme of repair. Ask them to discuss in pairs what they feel they have learned or enjoyed most. Say that they will have 90 seconds for this (but give them longer if you think they need it), and encourage them to write down key words on a scrap piece of paper if it will help them.


Ask for feedback as a whole class discussion.

## MAIN ACTIVITY:

### PART A

- Explain that there will be a Repair Café event coming up – either at a Parent's Evening or as part of the school Christmas / Summer Fair (or similar)
- Ask what the children think would be a good idea to share as part of this event. In pairs, ask them to **mind map** their ideas – both in terms of:
  - Ideas they have learned and want to share
  - Skills they have learned or would like to know more about.

### PART B

- Ask the children to feedback from this and start to build up a plan for the key jobs that need to be done ahead of the event (e.g. leaflet writing, PowerPoint presentation, darning stall, toy fixing stall...?).
- Divide the class into working groups to start thinking about the delivery of these tasks
- Encourage them to start planning – use this planning model? 
- The follow up to these lessons will take shape following the children's ideas.

## Materials:

The following are the key resources for this lesson:

- Examples of work and items from previous lessons
- If not all 9 lessons have been introduced, it will be essential that at least one of the introductory material from lessons 1 and 2 has been covered to set the scene / context
- Paper / card
- Pens / pencils

## Useful references:

### Follow up work:

- Completion of the leaflets / presentations etc. ready for the event
- Letters of invitation to people who may be taking part or helping and to parents and other members of the community who the children would like to attend
- Preparing a tea and coffee / cake and biscuit stand – which could be a Fair Trade stand as well following up on the work introduced.

Who will do what?

What they want to do / by when?

What they will need?

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# References:

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A Cross Curricular Resource - KS 2

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## **Books:**

Inkpen, M. (2007) *Threadbare*. Hodder Children's Books. London.

Norman, J. (*Fwd only*) (2007) *Make Do and Mend*. Michael O'Mara Books Ltd. London.

## **Films:**

*Toy Story 2* (2000). Pixar.

## **Websites / weblinks:**

### **Introductory pages:**

#### **Page 1:**

Practical Action:

<http://practicalaction.org/schools>

Oxfam Education:

<http://www.oxfam.org.uk/education>

Wastebuster:

<http://www.wastebuster.co.uk/universe>

Waste Resources Action Programme:

<http://www.wrap.org.uk>

Waste Resources Action Programme (Sustainable Textiles focus):

<http://www.wrap.org.uk/sustainable-textiles>

#### **Page 2:**

Malvern Hills Repair Café:

<http://www.malvernhillrepaircafe.co.uk>

Malvern Hills Repair Café Facebook Page:

<https://www.facebook.com/MalvernHillsRepairCafe/>

Worcester Resource Exchange (WRE):

<http://www.wre.uk.com>

Ifixit Website:

<https://www.ifixit.com>

Wikihow:

<http://www.wikihow.com/Main-Page>

### **Lesson 1 – Page 4:**

*Patagonia* company website – link to short film *Worn Wear Stories*:

<http://www.patagonia.com/eu/enGB/common-threads/>

### **Lesson 2 – Page 5:**

*Patagonia* website – link to longer film – *Worn Wear*:

<http://www.patagonia.com/eu/enGB/common-threads/>

*Story of Stuff*:

<http://storyofstuff.org/movies/story-of-stuff/>

*The Observatory of Economic Complexity* – it sounds complicated – but it isn't. Use the search icon (top right – small magnifying glass) to help get started:

<http://atlas.media.mit.edu/en/>

### **Lesson 3 – Page 6:**

*The Imperial War Museum*:

Clothes links:

<http://www.iwm.org.uk/collections/item/object/205200381>

<http://www.iwm.org.uk/collections/item/object/205198394>

<http://www.iwm.org.uk/collections/item/object/30094415>

*The Imperial War Museum*:

Make Do and Mend / Rationing links :

<http://www.iwm.org.uk/history/10-top-tips-for-winning-at-make-do-and-mend>

<http://www.iwm.org.uk/history/how-clothes-rationing-affected-fashion-in-the-second-world-war>

<http://www.iwm.org.uk/history/8-facts-about-clothes-rationing-in-britain-during-the-second-world-war>

*Ifixit* darning guide:

<https://www.ifixit.com/Guide/How+to+Darn+a+Hole+in+a+Knitted+Garment/27415>

*Make's* Darning Guide:

[http://makezine.com/2009/03/04/darn\\_it/](http://makezine.com/2009/03/04/darn_it/)

*The Guardian's* guide to darning:

<http://www.theguardian.com/lifeandstyle/2014/sep/22/how-to-mend-moth-holes>

*BBC* Information about the Battle of the Atlantic:

[http://www.bbc.co.uk/history/worldwars/wwtwo/battle\\_atlantic\\_01.shtml](http://www.bbc.co.uk/history/worldwars/wwtwo/battle_atlantic_01.shtml)

An extra website / blog of interest: *Tom of Holland* – excellent example of beautiful darning:

<http://tomofholland.com/tag/scotch-darning/>

## Lesson 4 – Page 7:

*National Geographic* clip on You-tube linking water use to production of a single T Shirt:  
<https://www.youtube.com/watch?v=xEEExMcjSkwA>

*Levi's* clip on repairing your old favorite jeans:  
[http://www.levi.co.uk/US/en\\_US/customize/repair-your-favorites](http://www.levi.co.uk/US/en_US/customize/repair-your-favorites)

*Creative World* (USA) - incredibly useful stitch guide:  
<http://www.dmc-usa.com/Education/How-To/Learn-the-Stitches/Embroidery-Stitches.aspx>

*Wikihow* guide to fixing a hole in jeans:  
<http://www.wikihow.com/Fix-Ripped-Jeans>

*Oxfam's* The Clothes Line pack linked to cotton production:  
<http://www.oxfam.org.uk/education/resources/the-clothes-line>

*The Guardian's* introduction to the value of water:  
<http://www.theguardian.com/commentisfree/2015/may/29/wasting-water-luxury-shortage-four-billion-people>

*Water Footprint Network's* guide to the links between products and water use:  
<http://waterfootprint.org/en/resources/interactive-tools/product-gallery/>

## Lesson 5 – Page 8:

*Sew Mama Sew's* introduction to mending toy's eyes with embroidery:  
<http://www.sewmamasew.com/2015/03/6-super-cute-options-for-toy-eyes/>

*Tinkercad's* web-site – for simple Computer Aided Design:  
<https://www.tinkercad.com>

## Lesson 6 – Page 9:

*BBC* report on mobile phone repair workshops and issues in West Africa:  
<http://www.bbc.co.uk/news/business-29840110>

*Wastebusters* introduction to WEEE (Waste Electrical and Electronic Equipment):  
<http://www.wastebuster.co.uk/teachers-bin/lessons-and-activities/featured-resources/weee-resources>

## Lesson 7 – Page 10:

*Switched On Kids* website on electrical safety in the home:  
<http://www.switchedonkids.org.uk>

*Fire Service* web-site – details of home fire safety checks:  
<http://www.fireservice.co.uk/safety/hfsc>

*Electrical Safety First's* website highlighting dangers in the home:  
<http://www.electricalsafetyfirst.org.uk/guides-and-advice/electrical-items/>



## **Lesson 8 – Page 11:**

*Haynes* on-line manuals pages:

<https://haynes.co.uk/catalog/manuals-online>

## **Lesson 9 – Page 12:**

*Skatexs* company website introducing good ideas for maintenance and skateboard repair:

<http://www.skatexs.com/blogs/news/9432593-skateboard-maintenance-for-beginners>

This link only works if you copy and paste it into your web-browser.

*Micro-scooters* company website introducing scooter maintenance:

<http://www.micro-scooters.co.uk/scootermaintenance>