Flat Packed Charity Collection Boxes.

GCSE Product Design
Maximising exam success.

Manufacturing sustainability & the 6Rs.
Introducing the Six R’s.

Starter Activity:
It is important to understand the 6R's, sustainability and the environmental issues.

Knowing the key words and what they mean is essential as this is a topic which is regularly featured in the summer examination.

As a lesson warm up find the words on this word search.

http://practicalaction.org/6rs
Starter Activity:
Answers.

Now let's find out in more detail what these words mean.

http://practicalaction.org/6rs
Introducing the Six R’s.

Starter activity: What’s the specification?

- **Working independently** - look at the two products in the images provided.

- Make a list in your exercise books of the **PROS & CONS** of both of these bags.
Introducing the Six R’s.

**PROS**
- Free to the consumer
- Readily available
- Biodegradable inks now added for natural decomposition.

**CONS**
- Bad for the environment
- End up in land fill
- Often non recyclable

**PROS**
- Long lasting/stronger/fashionable
- Can replace in the store of which bought for free
- Kinder for the environment/reduces use of plastic bags
- Can be repaired if required.

**CONS**
- Initial higher cost
- Relies on the consumer to remember to bring the bag each time they shop.
- Not water proof/resistant.
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They encourage customers to refuse standard bags & rethink about how they carry their shopping in order to reduce the number of bags used.

Bag For Life - can be reused, if it breaks it can be exchanged for a new one and the old one will be recycled.

The Natural Green Bag – A strong fabric bag which can be reused and repaired if needed.

Tesco’s offer recycling of their standard carrier bags in all their stores.
FROM GARBAGE TO DIRT: The Decomposing Time line

1 year: paper towel
2 years: wool socks
5 to 7 years: plastic bag
20 years: tin can
40 years: aluminum can
50 years: orange peel
500 years: newspaper
1 Million years: nylon fabric

Environment.
What are the big sustainability issues for designers?

Resource use - We use so much and so many materials.

Many of the products we use daily use materials that are in scarce supply and are non-renewable.

If everyone in the world used as any resources as we do in the UK, we’d need three planets to sustain us.
The Big issues

Climate Change

Many products use a lot of energy to:
- Process materials and produce
- Transport
- Use and dispose

The energy used throughout the product ‘lifecycle’ releases carbon dioxide, which contributes towards climate change.

(Q) In terms of climate change what problems can this pose?

Write your response in your revision book. Discussion to follow.

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Impact on people

There are **people** involved at each stage of the development of a new product.

Make a list of all people who might be involved in the production, use and disposal of:

- Fair trade ice cream
- Non fair trade ice cream

(Q) Who are the people that benefit and who loses out throughout the whole of the product lifecycle?
Introducing the Six R’s.


The 6R’s could be a way of helping you think about the reducing the impact of a new product on the environment and people.

Activity:
Match the 6R’s on your worksheet to their definitions. To save time simply draw an arrow matching up the definition to the title.

Once completed & checked these will be glued into your exercise books.
Introducing the Six R’s.

How did you do? Check answers

- **RETHINK:** Do we make too many products? Design in a way that considers people and the environment.
- **REFUSE:** Don’t use a material or buy a product if you don’t need it or if it’s bad for people or the environment.
- **REDUCE:** Cut down the amount of material and energy you use as much as you can.
- **REUSE:** Use a product to make something else with all or parts of it.
- **RECYCLE:** Reprocess a material or product and make something else.
- **REPAIR:** When a product breaks down or doesn’t work properly, fix it.
Environmental Concerns in terms of materials, manufacture and disposal.

Often referred to as the 6 R’s.

Six words beginning with the letter R.
Each describes an action that can be taken to reduce the environmental impact of products.

- Recycle
- Reduce
- Reuse
- Rethink
- Refuse
- Repair

It’s important that designers do their part in taking these things in to account when designing new products.

In terms of your controlled assessment you need to discuss MESS development in order to access the top level band grades.
Recycling is where products are converted back to their basic materials and remade into new products.

Examples include:
- Glass crushed, melted and made into new bottles.
- Plastic bottles recycled into drainage pipes and clothing. (It takes 25 two litre plastic bottles to make one fleece.)

Designers and manufacturers of products need to design products for recycling. Many local councils now collect materials that can be recycled separately from normal domestic waste.
Consumers need to look to reduce the number of products they buy, or consider buying products that use less energy.

Manufacturers are looking to design products that:

- Have less materials in the product
- Take less energy to manufacture
- Need less packaging during transport.

Retailers can reduce carbon emissions by transporting products straight to the consumer from the place of manufacture, instead of via warehouses and shops.
Introducing the Six R’s.


Lots of items can be reused in the same form.

Glass milk bottles are a classic product that is reused. A more recent product that can be reused is a printer cartridge, which can be refilled.

Some products have filters that can be washed rather than using disposable, single-use filters.

Consumers could sell or donate products they no longer use themselves, so that someone else can use them.
Consumers can ask the question, “Do I really need this product?” (Do you really need to replace your mobile phone every year?)

Designers and manufacturers can make products that do the same job more efficiently.

They can design the packaging so that it is easier to recycle (for example, by making the packaging from a single material).
Introducing the Six R’s.


The consumer has the choice as to whether they buy / use a product or not.

They can ask the following questions:

- Should they refuse the product because it is too inefficient (in use, or in its use of materials)?
- Should they refuse the product because its packaging creates too much waste? (Disposable cups from the coffee shop, plastic carrier bags from the supermarket, plastic water bottles.)

The designer and manufacturer have an increasing need to think about how the consumer will react to their products; will they refuse them?
Instead of throwing things away consumers need to think more about having things repaired.

Designers have a responsibility to design products that can be repaired more easily.

It takes fewer resources to replace a part of a product, than to replace the whole item.

Could an item be upgraded instead of replace with a new one?
GCSE Product Design 2016: Section A – Flat Packed Charity Collection Boxes.

Global Responsibility.
AQA PD Core topic 6.

In this core topic we will be covering:

- Recycling Symbols
- Sustainability
- The 6R's
- Carbon Footprint
- Fair Trade
- Social Impact

Topic 6 Revision notes to be played on the hyperlink below.

Plenary Activity: Using 6 R’s

Look at the **party bag** and its contents below.

Roll the dice you have and using the 6R sketch and make notes on how you could apply the “R” to this product in a way that considers people and the environment.
6R’s and party bags

- **Rethink:** What could you do differently? Do we need party bags at all?
- **Refuse:** Are there materials you would choose not to use?
- **Reduce:** Can you reduce the packaging?
- **Reuse:** Can the bag or its contents be used again for another purpose?
- **Recycle:** Have you used materials that are easy to recycle when finished with?
- **Repair:** It is possible to mend any of it or will it go to landfill if broken?
6R’s and Charity Collection Boxes

Using the same method as in the previous slide
Look at the example of a charity collection box.

Roll the dice you have and using the 6R sketch and make notes on how you could apply the “R” to this product in a way that considers people and the environment.
Some video clips on Recycling

https://www.youtube.com/watch?v=Lx0aUk2AiNQ

https://www.youtube.com/watch?v=vhmg6l_WNSE

https://www.youtube.com/watch?v=5xlqz31x9yo

https://www.youtube.com/watch?v=zyF9MxIcI

tw

https://www.youtube.com/watch?v=Bx0ozMweqoU
Designers in action

To see examples of designers who include the six R’s in their work. View

http://practicalaction.org/education/design_and_technology_profiles

Or sustainable companies

http://practicalaction.org/sustainable-companies
Activity:

Using the glossary in the Product design text book look up the meanings of these words.

Write down in your revision exercise book what the words mean. This will form revision notes for your personal use.

Next lesson we will have a quiz on their meanings.

http://practicalaction.org/6rs
Homework – Create your own revision notes.

This afternoon we have been looking at sustainability and the 6R’s. This is a topic which crops up regularly in the exam paper and does feature in your mock exam.

For homework I would like you to read the information sheet, highlight the key words/terms and then make your own version on the blank document.

Revision Tip.
Often re-writing words helps you remember them.
A QUICK RE-CAP FROM LAST LESSON.

In your revision exercise book write today's date (8.1.16) and the title previous lesson quiz and answer these questions.

1. What am I? Symbol name & meaning.
2. What am I? Symbol name.
3. What do I mean? Can you explain the definition.
4. Can you draw my symbol?
5. What am I? Symbol name & can you provide a product which may be able to be recycled using this method?
6. You have 10 minutes to complete. Then swap for peer marking.

REPAIR.

REDUCE.
In your revision exercise book write today's date (8.1.16) and the title previous lesson quiz and answer these questions.

1. **What am I?**
   Symbol name & meaning.
   - **What am I?**
   - Symbol name & meaning.

2. **Keep Britain tidy’ logo.**
   Encouraging people to respect their area and not litter.
   - **What am I?**
   - Symbol name & meaning.

3. **REPAIR.**
   To fix something instead of replacing or buying a new one. Reduce costs and waste of materials.

4. **The FSC SYMBOL.**
   For every tree cut down, three more are replaced in its place.
   - **What am I?**
   - Symbol name & meaning.
   - Can you draw my symbol?

5. **Symbol means that you can recycle glass bottles. (E.g.) green bottle glass, wine bottles, drinks etc. it can then be cleaned and reused or broken down into other products.**

6. **REDUCE.**
   Reduce the amount of materials in a product, take less energy/time to manufacture, less packaging.
   Consumers can reduce the amount they buy also.