

# Sustainability

Design technology

What do you think are the  
roles of **DESIGNERS**

*Designers* should define their role as agents of good in the world and limit their work to *products* that are needed and can be made *without* damage to *nature* or *people*.

(Phillip Starck)





## Design Brief

Design and make a product that could be sold at a craft market. The product is to be sustainable and made from discarded / outdated product. The product must be at least 85% repurposed. The final product must be of a size that can be transported to and from a market stall.

## Design Context

As a designer you have been approached by a local stall-holder at a craft market. They have asked for your help to design and make a product for a product line that they would like to sell. The stall owner currently buys and sells quality used goods such as vintage equipment, furniture and clothes. They have noticed a shift in the market. They feel that their stall would benefit from selling products that are made from recycled materials / products / components.

## Design Specification

- The product must be **safe**.
- The product must be **sustainable**.
- The product must show **creativity**.
- The product must maximise **profitability**.



<ul style="list-style-type: none"> <li>• Use a product to make something else with all or parts of it.</li> <li>• Get the maximum use out of a product before disposing of it.</li> <li>• This can relate to packaging also – e.g. plastic carrier bag, wash out glass bottle and refill.</li> </ul>		Reuse
<ul style="list-style-type: none"> <li>• Do we make too many products? Do we actually need all the things we buy?</li> <li>• Design in a way that considers people and the environment.</li> <li>• Rethink the design of products to minimise use of non renewable resources and the use of energy in manufacture.</li> </ul>		Repair
<ul style="list-style-type: none"> <li>• Reprocess a material or product and make something else.</li> <li>• Put used recyclable products in recycling bins.</li> <li>• Materials will need to be separated; some are too difficult to separate and therefore cannot be recycled.</li> <li>• Examples include glass, many plastics, metals, paper, wood, most materials can be recycled in some way.</li> </ul>		Reduce
<ul style="list-style-type: none"> <li>• 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.</li> <li>• Refuse plastic carrier bags and unnecessary packaging when offered.</li> </ul>		Rethink
<ul style="list-style-type: none"> <li>• Cut down the amount of material and energy you use as much as you can.</li> <li>• Reduce the amount of consumable products you use.</li> <li>• Recycling and Reusing existing products and materials.</li> </ul>		Recycle
<ul style="list-style-type: none"> <li>• When a product breaks down or doesn't work properly, fix it instead of buying a new product.</li> <li>• This will minimise use of non-renewable resources and energy used in manufacture.</li> </ul>		Refuse

**Link the description to the key word**

# Rethink

- Do we make too many products? Do we actually need all the things we buy?  
Design in a way that considers people and the environment.
- Rethink the design of products to minimise use of non renewable resources and the use of energy in manufacture.

# Reuse

- Use a product to make something else with all or parts of it.
- Get the maximum use out of a product before disposing of it.
- This can relate to packaging also – e.g. plastic carrier bag, wash out glass bottle and refill.

# Recycle

- Reprocess a material or product and make something else.
- Put used recyclable products in recycling bins.
- Materials will need to be separated; some are too difficult to separate and therefore cannot be recycled.
- Examples include glass, many plastics, metals, paper, wood, most materials can be recycled in some way

# Repair

- When a product breaks down or doesn't work properly, fix it instead of buying a new product.
- This will minimise use of non renewable resources and energy used in manufacture.

# Reduce

- Cut down the amount of material and energy you use as much as you can.
- Reduce the amount of consumable products you use.
- Recycling and Reusing existing products and materials.

# 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.
- Refuse plastic carrier bags and unnecessary packaging when offered.

# Revision Material

Make a poster based on one of the 6 Rs.

The poster must –

- *Have your 'R-word' large and eye catching.*
- *Describe and define what the word means.*
- *Include relevant examples in words and diagrams to help explain the 'R-word'.*
- *Use colour and be aesthetically pleasing.*



Produce a poster to educate others on the 6R's and their importance

# Materials **r**esearch

Log of what you house hold throws away in one week

Item	Amount	Material	How the material is disposed of away	Can the material be recycled?	Alternative material that the manufacture could use	Weight of the material for the individual product	Total weight of material thrown away	Amount your house throws away every year
Plastic milk carton	2 per week	HDPE 2 plastic	Recycling bin for plastic	Yes	Glass bottle that you take to the shop and refill it.	19 grams	38 grams	1.98 KG per year
<b>Add additional rows as required</b>								



Taking learning to a whole new level...

Total weight of material thrown away each year =

## Summary of your household waste

What do you throw away the most?

What could your household do to reduce the amount of waste that you produce?

Are there any products that can repurposed or upcycled?

Give some suggestions of what you can change a product or material into you could this with some basic drawings to support

How are materials manufactured describe how each of these materials are made use the videos to support

<p><b>Plastic acrylic</b> <a href="https://www.youtube.com/watch?v=MahBmZ66Eno">https://www.youtube.com/watch?v=MahBmZ66Eno</a></p>	<p><b>Metal steel</b> <a href="https://www.youtube.com/watch?v=JgAwj4xeWE">https://www.youtube.com/watch?v=JgAwj4xeWE</a></p>	<p><b>Alloy aluminium</b> <a href="https://www.youtube.com/watch?v=34udpj0fB7o">https://www.youtube.com/watch?v=34udpj0fB7o</a></p>	<p><b>Composite carbon fibre</b> <a href="https://www.youtube.com/watch?v=ki1aCdkMSeo">https://www.youtube.com/watch?v=ki1aCdkMSeo</a></p>	<p><b>Wood pine Timber</b> <a href="https://www.youtube.com/watch?v=SwxinbpQ9B4">https://www.youtube.com/watch?v=SwxinbpQ9B4</a></p>	<p><b>Wood Manufactured board MDF</b> <a href="https://www.youtube.com/watch?v=-DJypFyptRY">https://www.youtube.com/watch?v=-DJypFyptRY</a></p>

# Product Analysis

Product Analysis 2

Product Analysis 1



# Lets Think

We use **ACCESS FM** to help us write a **specification** - a list of requirements for a design - and to help us **analyse and describe** an already existing product.

**ACCESS FM - Helpsheet**  
DESIGN & TECHNOLOGY

**A** is for **Aesthetics**



**Aesthetics** means **what does the product look like?**  
What is the: Colour? Shape? Texture? Pattern? Appearance? Feel?  
Weight? Style?

**C** is for **Cost**



**Cost** means **how much does the product cost to buy?**  
How much does it: Cost to buy? Cost to make?  
How much do the different materials cost? Is it good value?

**C** is for **Customer**



**Customer** means **who will buy or use your product?**  
Who will buy your product? Who will use your product? Are they the  
products target market group? How will it improve their life? What is their  
Age? Gender? What are their Likes? Dislikes? Needs? Preferences?

**E** is for **Environment**



**Environment** means **will the product affect the environment?**  
Is the product: Recyclable? Reuseable? Repairable? Sustainable?  
Environmentally friendly? Bad for the environment?

**6R's of Design:** Recycle / Reuse / Repair / Rethink / Reduce / Refuse

**S** is for **Size**



**Size** means **how big or small is the product?**  
What is the size of the product in millimeters (mm)? Is this the same  
size as similar products? Is it comfortable to use? Does it fit?  
Would it be improved if it was bigger or smaller?

**S** is for **Safety**



**Safety** means **how safe is the product when it is used?**  
Will it be safe for the customer to use? Could they hurt themselves?  
What's the correct and safest way to use the product? What are the risks?

**F** is for **Function**



**Function** means **how does the product work?**  
What is the products job and role? What is it needed for? How well  
does it work? Is it fit for purpose? How could it be improved? Why is it  
used this way?

**M** is for **Material**



**Material** means **what is the product made out of?**  
What materials is the product made from? Why were these materials  
used? Would a different material be better? How was the product  
made? What manufacturing techniques were used?

**M** is for **Manufacturing**



**Manufacturing** means **How is the product made?**  
How has the product been made? Has CAD/CAM been used? Is this  
the best method of manufacture?

## Questions to consider when analysing a product

### Aesthetics

Does the product look good?  
Does it make good use of colour and texture?  
What has inspired its appearance?  
(E.G. Is it organic? Is it industrial?)

### Customer

Who is the product designed for?  
How and where would they use it?  
What effect will it have on their lives and relationships?  
Will it add value?  
How is the product promoted to attract customers?  
Has the designer considered how people will interact with the product?  
Does the product target a particular age group or sector of people?  
What assumptions have been made about the potential buyers/users?

### Cost

What is the estimated cost of the product?  
What is the retail price? What is the relationship between the two?  
Is the product affordable?  
Does it offer value for money? What is the product's cost in relation to the income of potential buyers/users?

### Environment

What is the product's impact on the environment?  
What happens to the product after use?  
How long will it last? What factors limit/lengthen its life span?  
Can it be repaired?  
Can parts be replaced?  
How easily can it be recycled?  
Who would pay for the cost of recycling?

### Safety

How has the designer considered safety issues in the products design?  
Think about the ways it is being used and how different parts have been joined together. Are there any risk assessment issues in relation to the use of the product?

### Size

Are the product's proportions appropriate for its use?  
If you increased or decreased the products size, would it look or function better?

### Function

Does the product do the job it was intended to do?  
How does it work?  
How easy is it to use?  
What effects will using it have, including those beyond intended use and user?

### Material

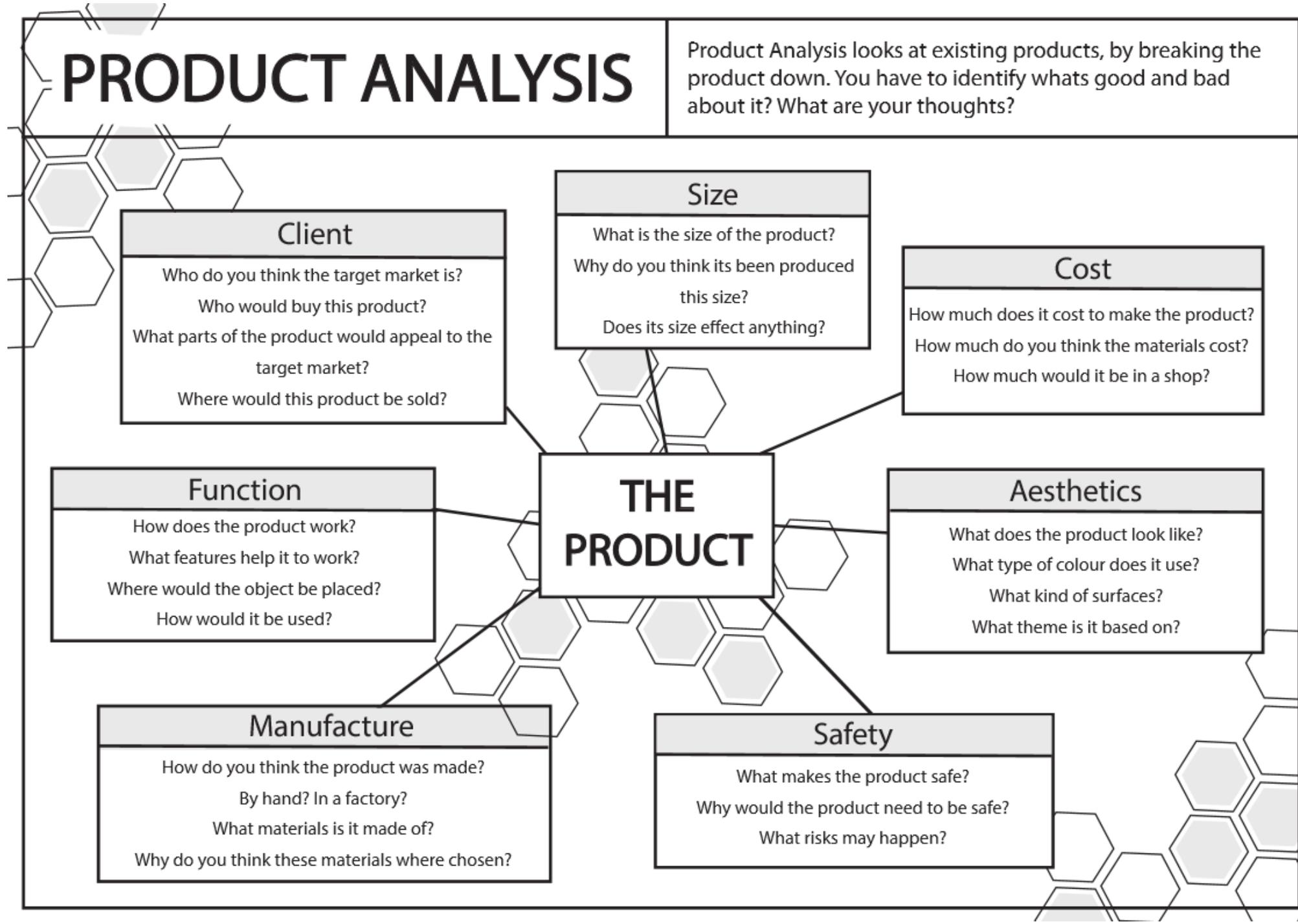
What materials are used to make the product and why?  
Would another type of material work better?  
What impact could the designers choice of material have on the environment?  
Where do the materials and other resources needed for production come from?  
Are they likely to run out?

Product analysis help sheet.

Answer the questions around a product

**Product 1** a product made out of recycled material

**Product 2** a product that has been upcycled



# Lesson Starter Product Analysis



Task: Pick one product from the examples below & list 5 things that you like and 5 things you don't like.  
REMEMBER YOU ONLY HAVE A FEW MINUTES.....SO DON'T HANG AROUND

Like

- 1.
- 2.
- 3.
- 4.
- 5.

Don't Like

- 1.
- 2.
- 3.
- 4.
- 5.



1. The Fender Stratocaster



2. The New 'MINI' Car



3. Classic Coke Bottle



5. The Swiss Army Knife



5. Philippe Stark - Alessi Juicy Salif Lemon Squeezer

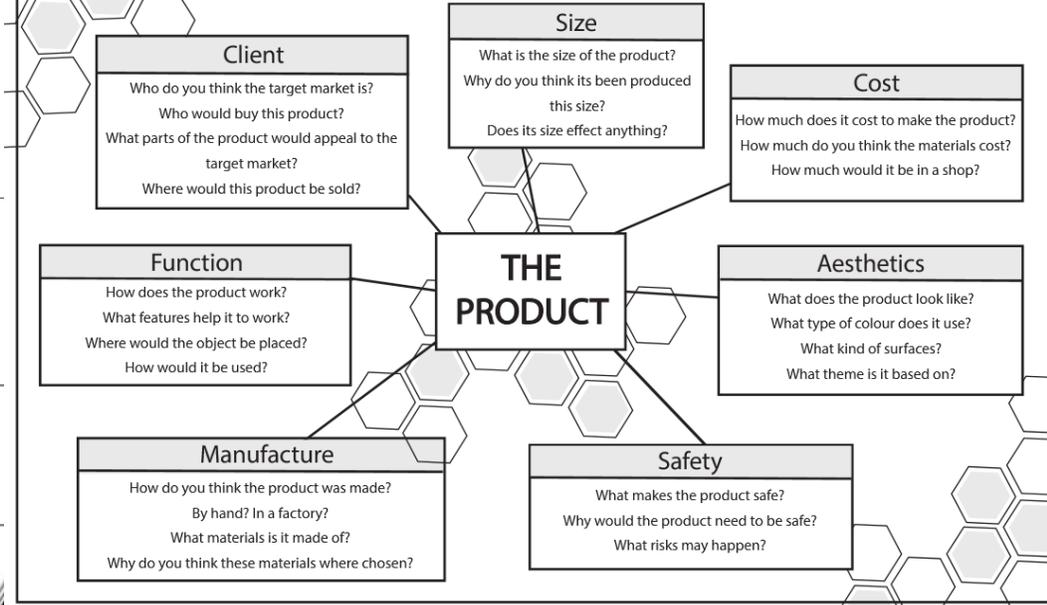


6. Nike Trainer

# Product Analysis Help

## PRODUCT ANALYSIS

Product Analysis looks at existing products, by breaking the product down. You have to identify what's good and bad about it? What are your thoughts?



Research Name

### Research: Product Analysis.

Aesthetics

Cost

Material

Function

Safety

Environment

Size



# Mood Board

Create a mood board

A page of images of products that have been made using the 6R's upcycling



Research  
Name

## Research: Product Analysis.

<i>A</i>	<b>Aesthetics</b>	How does the product look?
<i>C</i>	<b>Cost</b>	Cost to make/buy?
<i>C</i>	<b>Customer</b>	Who will want it? Target Market?
<i>E</i>	<b>Environment</b>	Impact on the environment?
<i>S</i>	<b>Safety</b>	How will it be made safe?
<i>S</i>	<b>size</b>	What size should it be?
<i>F</i>	<b>Function</b>	What will it do/how will it work?
<i>M</i>	<b>Material</b>	What materials will be used to make it?

**Aesthetics**

**Cost**

**Customer (user)**

**Material**

**Environment**

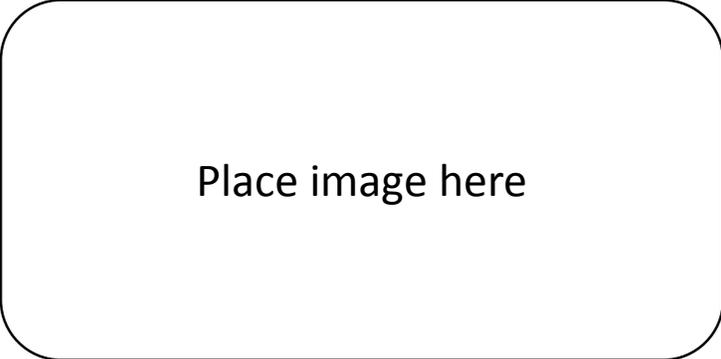
**Function**

**Safety**

**Size**

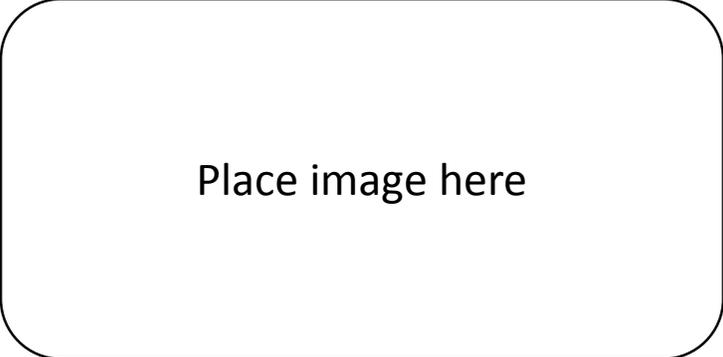


# Product Analysis 1



Place image here

# Product Analysis 2



Place image here

Three completely different ideas that allow you to utilise objects in you home that are going to be discarded / thrown out or that need to have a new life as a repurposed product

# Design Ideas

Make sure that you have the owner of the goods consent before you start



1

2

3

A large, empty rounded rectangular box with a black border, intended for writing the first design idea.A large, empty rounded rectangular box with a black border, intended for writing the second design idea.A large, empty rounded rectangular box with a black border, intended for writing the third design idea.

# Final Design

Annotate your final design to show how you are going to make the product, state what materials / repurposed products you are going to use to make your product

# Manufacturing plan

- How are you going to make the product?
- What materials are you going to use?
- What tools and equipment are you going to use to make the project (how and why)?
- Methods for making your product?
- Health and safety, is there anything you need to bear in mind when you are making you product? (sharp tools like knives)



Taking learning to a whole new level...

## Storyboard

- Diary of manufacture
- Take images of you making your product and annotate what you were doing

## Evaluation

- How do you think this project went?
- Photographs of your end product
- Is there anything that you would change?
- What have you learnt?
- How you market (sell) your product