Product Analysis Example: Look at these two Torches.

Value Torch from Tesco.

Shake Torch from Tesco.

Each of these torches has different **core design features**. They look different from outside, **(Above the Line)** and they are powered in a different way with different internal workings, **(Below the Line)**. They have both been designed for different **target groups** and the cost of each torch and the quality of design, manufacture and materials also vary from torch to torch.

Above the Line Analysis

Value Torch. Cost £0.92

This torch is manufactured by **injection moulding** abs plastic. It is **mass produced** so it made in large amounts and it is aimed at the **low cost market**. It is sold without batteries and does its basic job, but not that well. The plastic jams easily and it is unreliable when the batteries are inserted (Fig1.) and the product is put back together. It would probably not last very long and would cost more for the batteries to keep it working than the torch itself. The torch is sold without packaging and has a label stuck onto it that is very difficult to remove and can make the torch very sticky as the adhesive from the label is hard to remove. (Fig2.) If the Torch is not made to last then it will be thrown away as it will break easily or not work. The plastic casing has grips for holding the torch, removing the lens cover and operating the on off switch. It also has a ring on the end for storage. All of these facts have been discovered by looking at the Above the Line features and testing the torch. You could sketch these features in a sketch book and label these features with notes as a record of your observations as you try out the torch and **Evaluate** the product.

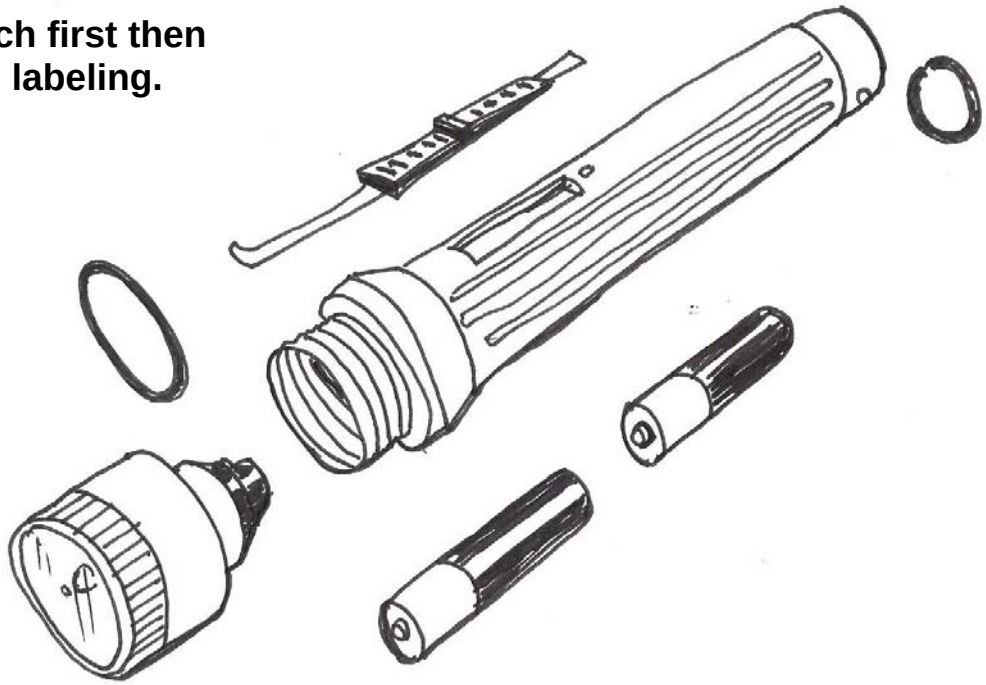
Fig1.

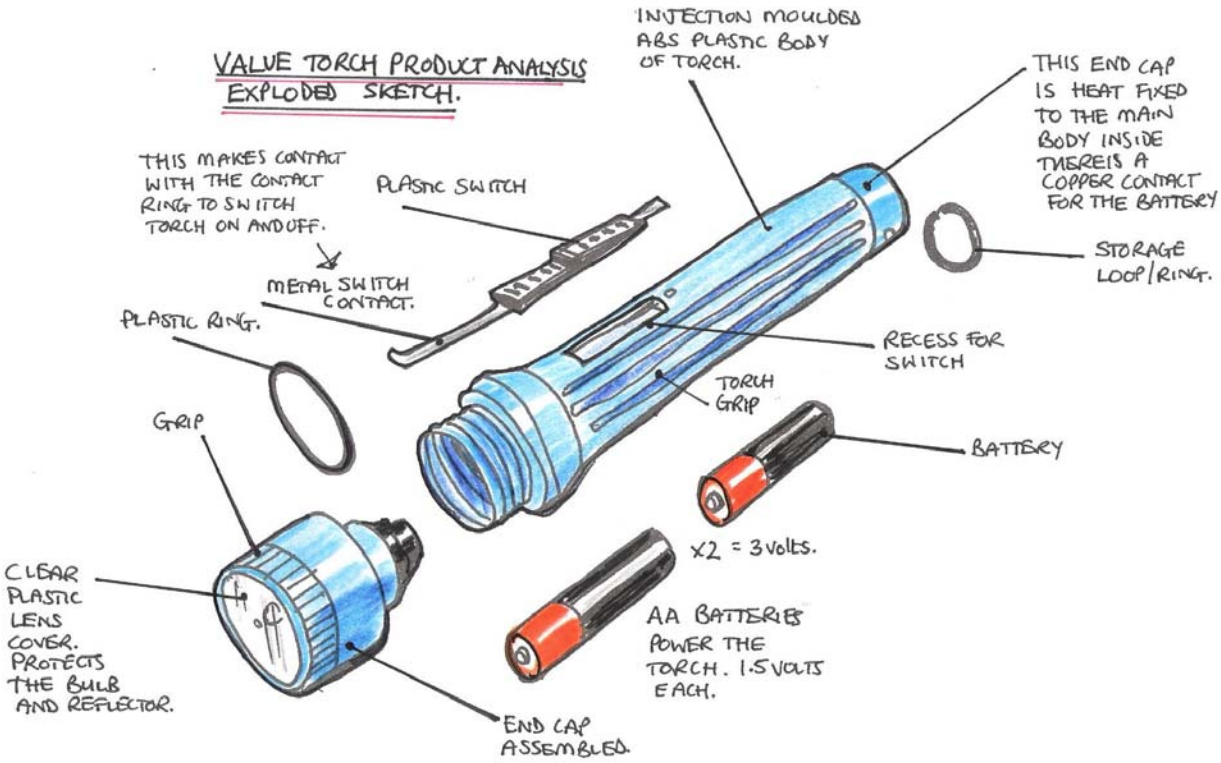
Fig2

Your observations should be recorded as a part of a sketch book. Sketch the product as you take it apart and label the key features it has with notes. Here is an example.

SKETCHING THE TORCH IS A HUGE PART OF PRODUCT ANALYSIS.
IT SHOULD BE A PART OF YOUR SKETCH BOOK.

Sketch the Torch first then add colour and labeling.





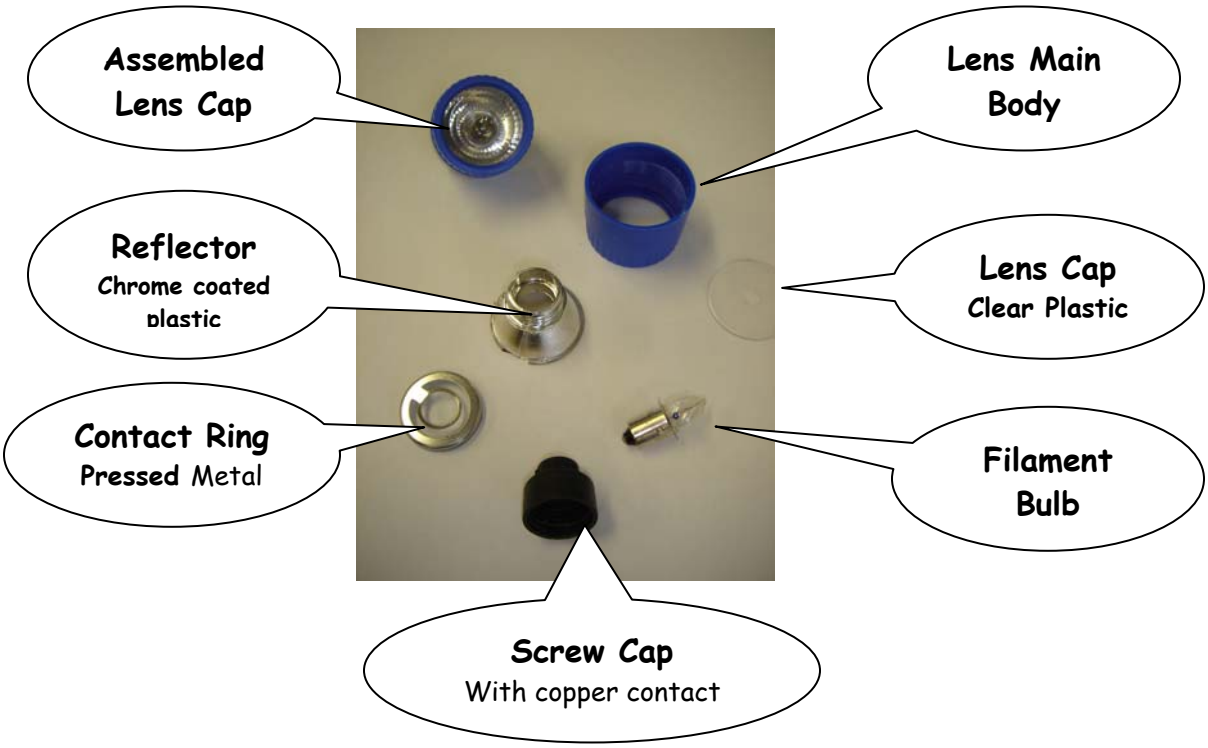
Below the Line Analysis

In order to learn more about the way the torch is manufactured, how it works and how each of the parts fit together we need to take the torch apart. First of all the lens is unscrewed so that the batteries can be taken out. The lens cover is made from 4 pieces and has an outer case, a lens cap to protect the bulb, a reflector, bulb, contact ring and screw cap. We can see how this fits together if we take it apart carefully.

Unscrewing the Lens Cover.

The Lens has a reflector that helps to reflect light from the bulb when it is used.

Disassembly of Lens Cover.



Disassembly of Whole Torch

When taking the torch apart you have to consider if you want to use the product again. If so you will only be able to take so much of it apart as you will end up breaking some parts. For example. The main torch body has an end cap that has been heat sealed together with a battery contact on the inside. If this was removed you would end up breaking the torch.

You can see in the photograph that there are 14 parts including the battery. The cost of the product is £0.92 without the batteries and it has traveled from China to the UK. So the actual cost of manufacture is even lower than the selling price as so many are made.

We can learn a lot just by looking at small every day products to understand how they are designed, manufactured and how they work. Using this knowledge you can redesign the torch or design a new version using different materials and a different more sustainable and environmentally friendly power supply. Just like the designer of the new ‘Shake Torch’ did.

Introducing the Greener living Energy Saving Shake Torch.

Above the Line Features:

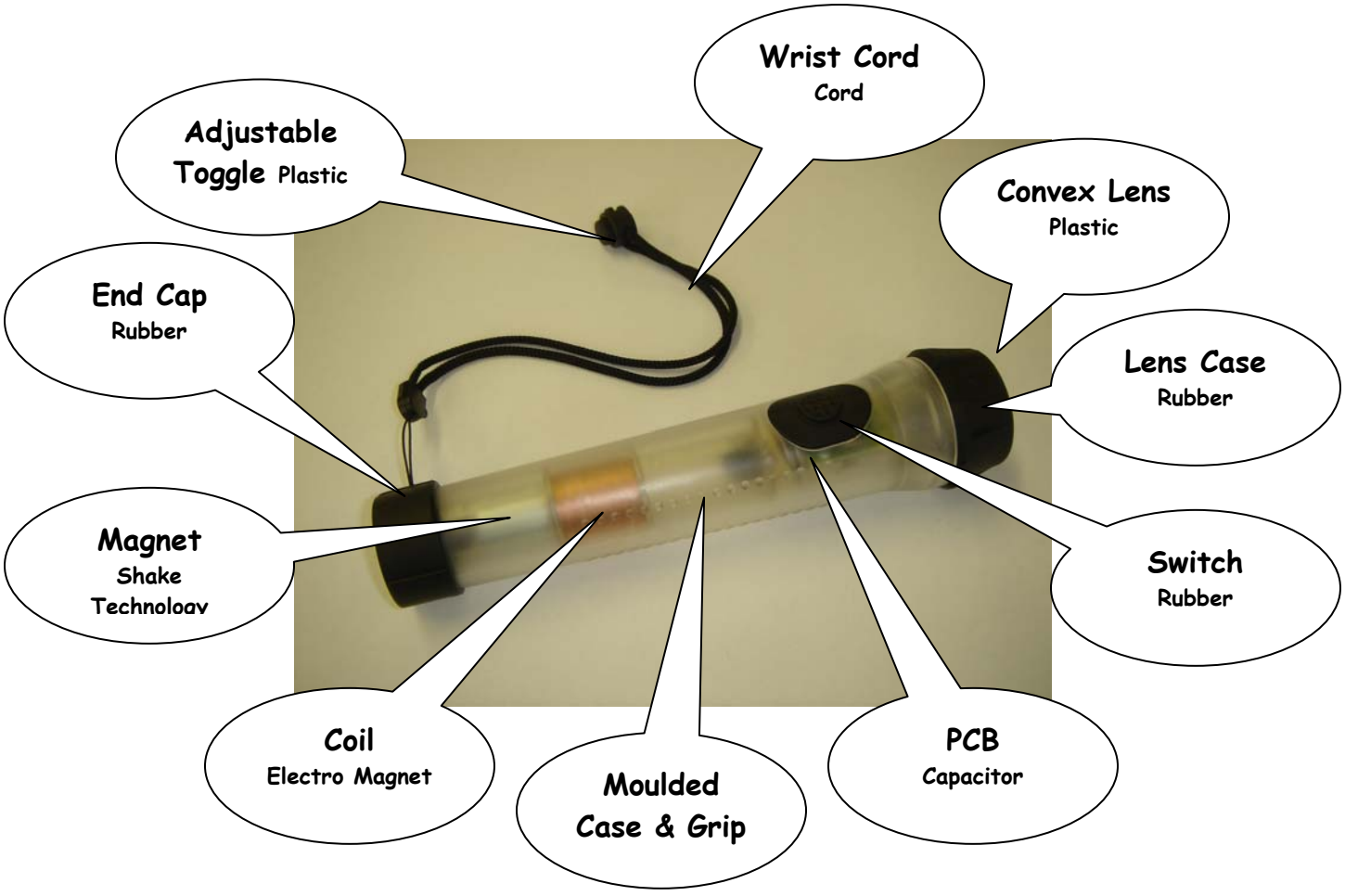
- The torch is manufactured from frosted abs plastic with a moulded grip.
- The frosted plastic allows you to see the internal below the line features and se how the torch **functions**.
- The end caps and switch are manufactured in rubber which protects the torch if it is dropped.
- The torch is self powered by shaking the torch to generate electricity. Therefore it requires no replacement batteries.
- The LED requires little power to make it work and the lens is thicker and it is convex in shape so it is brighter.
- The torch has a strap with an adjustable toggle so that it can be altered to fit various sizes of users.
- The sticky label on this product can be easily removed and does not damage the product.
- It is well made and works well; the light is bright and focused.
- The cost of the torch is £3.20.

In comparison to the value torch this one would pay for itself as there are no batteries required. The only negative factor is that the LED cannot be replaced if it breaks. Therefore it is a throw away product if it breaks. The Shake Torch is targeted at today's market with an emphasis on its environmentally friendly greener and sustainable design.

Below the Line Features:

- The Shake torch uses electro-magnetic technology to generate electricity like a dynamo.
- When the shaking the torch a cylindrical magnet inducts the coils in a coil of wire by passing through it in each direction as you are shaking it. This movement generates enough electric current to store its charge in a capacitor on a printed circuit board. This harnessed power can then power the bright LED hen the rubber switch is switched on.

Greener living Energy Saving Shake Torch.



Here are some other torches that could be analyzed to learn more about Product Design.

There are lots of different torches designed for different uses. Some that are angle poised and free standing. Pocket sized or even credit card sized. We could also consider the packaging. Is it necessary and what is its purpose? A lot of it is plastic and is thrown away. It also adds to the cost of the product.

A selection of alternative torches.

Novelty LED Key Lights.

Packaging. Is it necessary?

This Torch uses a battery sachet to power the torch. The only down side to this is the fact that it is not replaceable. So it is a throw away product and not Sustainable.

Each of the torches we have looked at can generate new ideas for designers. A designer designing a new torch or any other product would study the market and the products being sold. Using this information from the **Market Research** a new **specification** would be developed in order for designing to begin on a new product.