

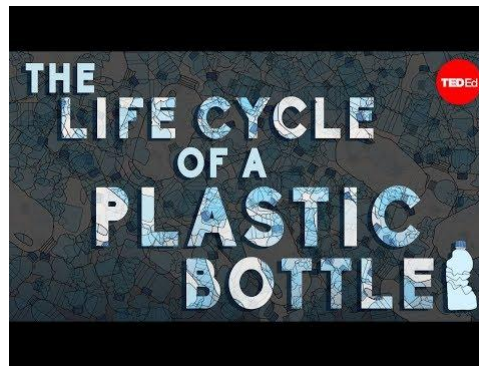


Y7/8 | CRUMBLE ENRICHMENT KNOWLEDGE ORGANISER

Key Terms	Description
Polymers (plastic)	Plastic is a material which is produced from crude oil and is used to make many objects. It is lightweight and does not break easily.
Biomimicry	Biomimicry is the science of applying nature-inspired designs in human engineering and invention to solve human problems.
Problem Solving	The process of finding solutions to difficult or complex issues.
Design Brief	This is a short, concise statement that outlines what it is you are making and who it is for.
Design Specification	The specification expands on your brief, giving more detailed information that you have learnt from your research.
Single Use Plastics	Single-use plastics, or disposable plastics, are used only once before they are thrown away or recycled.
The 6 R's	These include reduce, reuse, recycle and are used by designers to reduce and evaluate the environmental impact of products.
Input Device	A component or device that sends data or instructions into a computer for display, processing, storage or outputting.
Output Device	An output device is any piece of computer hardware equipment which converts information into human-readable form such as sound, visuals or movement.
Logos	A logo is a graphic mark or symbol used to aid and promote public identification and recognition of a brand or company.

Project Materials

- If all cans were recycled in the UK we would need 14 million fewer dustbins.
- Over 12.5 million tonnes of paper and cardboard are used in the UK per year. Which is the equivalent weight of 260 QE2s (Queen Elizabeth Cruise Ship).
- Paper and card account for 1/5 of all waste produced in the UK.
- 20 times more plastic is made and used today than it was 50 years ago.
- Most households throw away at least 40kg of plastic each year, which is enough to make 10 recycle bins.
- You could drive a car 11 metres on the oil it takes to make 1 plastic bag.



What's the environmental impact?

Water bottles are made of completely recyclable polyethylene terephthalate (PET) plastics, but PETs don't biodegrade they photodegrade, which means they break down into smaller fragments over time. Those fragments absorb toxins that pollute our waterways, contaminate our soil, and sicken animals (which we then eat). They may take centuries to decompose while sitting in landfills, amounting to endless billions of little environmentally poisonous time bombs. Ten percent of the plastic manufactured worldwide ends up in the ocean, the majority of that settling on the ocean floor where it will never degrade.

“Design is not just what it looks like and feels like. Design is how it works.”

Steve Jobs, co-founder of Apple



Y8 | CREATIVE SOUND KNOWLEDGE ORGANISER

Key Terms	Description
Polymers (plastic)	Plastic is a material which is produced from crude oil and is used to make many objects. It is lightweight and does not break easily.
Thermosetting	A polymer that becomes irreversibly shaped when heated, is hard, resists chemicals well and is a good electrical insulator. It is difficult to recycle.
Thermoforming	A polymer that can be reheated and reshaped multiple times, can be used for a wide variety of products and is easily recycled.
Design Brief	This is a short, concise statement that outlines what it is you are making and who it is for.
Design Specification	The specification expands on your brief, giving more detailed information that you have learnt from your research.
2pt Perspective	A technical drawing method used to produce your design ideas. Consisting of a horizon line and 2 vanishing points.
Soldering	A process in which two or more parts are joined together by melting solder into the joint.
LCA	Life Cycle Analysis is the investigation of each stage of a products life cycle, from the sourcing of the raw materials to what happens at the end of the products' useful life.
The 6 R's	These include reduce, reuse, recycle and are used by designers to reduce and evaluate the environmental impact of products.
Tensol Cement	It is a solvent based glue which melts the surfaces of the acrylic. Pressure needs to be applied to help it set correctly.

Project Materials

Polymers: Also known as plastics. There are two main types of polymers, thermosetting and thermoforming.

Thermosetting

Once heated and formed to a shape, it cannot be reheated and reformed. These polymers are good electrical insulators and resist chemicals well. Products made from this type of polymer are difficult to recycle.



Thermoforming

Heated and formed to a shape and can be reheated and reshaped multiple times. Every time they are, the quality of it is reduced. Products made from this polymer can be



Product Focus - Water Bottle

Typically, plastic bottles are made from polyethylene terephthalate (PET), a thermoforming polymer. This is because the material is both strong and light.

Firstly a preform is made from the PET in the shape of a test tube (this varies in size depending on the bottle being made). This preform is heated to a specific temperature and placed in the mould which closes around it, leaving the top of the preform (the top of the bottle) exposed. The inside of this mold is shaped exactly like the finished bottle.

A tube passes down into the preform and blasts enough pressurized air into it to force it against the sides of the mold. This stretch blow molding process must happen quickly in order to maintain a consistent shape.

Preform



Mold



Finished bottles



“Design is not just what it looks like and feels like. Design is how it works.”

Steve Jobs, co-founder of Apple