



Resources for Schools

Recently public interest in recycling has escalated, and environmental issues are built into the National Curriculum from an early stage.

Recycling is a common area of study in the primary classroom and falls under Education for Sustainable Development. It can include elements of primary science, such as materials and their properties, magnets, reversible and irreversible change, forces and so on. Looking at how materials are sorted and recycled can broaden the pupils' perspective of materials, how they are recycled and how they are used around the world.

The majority of household waste continues to be sent to landfill for disposal, but in most areas local authorities are providing recycling collections on a kerbside collection basis. Most areas at least also have some local recycling banks often at supermarket car parks to which householders can deliver materials for recycling. All of the options for waste disposal and recycling have some negative impacts on the environment whether this be the pollution of water by leachate, the contribution to global warming of landfill gas or incinerator emissions or the transport implications of moving waste around the country. There is a concern that energy from waste will dominate over the alternatives and that this might reduce our capacity to recycle, reuse and reduce waste production.

Children rarely have an opportunity to visit waste management facilities but with the help of J&B Recycling the pupil or student can see how the principles of materials and physical science are applied in practice particularly at our Materials Recycling Facility (MRF). Our MRF uses a range of scientific principles on a large scale in order to automate the sorting and segregation of materials. These include relative mass, balanced and un-balanced forces, the effect of gravity and the refraction of light, magnetism etc.

Recycling and the National Curriculum

Recycling studies also offers a range of cross-curricular opportunities for learning via the National Curriculum Key Stages 1-4 covering such principals as sorting materials according to observable features and properties, finding out where they come from, how and why they are used, how they can be changed and how they can be disposed of or recycled, investigating the effects of different forces and how they can use these to move mechanical parts or objects in specific ways, what happens when materials are mixed, and whether and how they can be separated again plus exploring and explain practical ways in which science can contribute to a more sustainable future.

It is integrated into Science, Geography and Design & Technology and can help support schools with national initiatives such as Eco-Schools and Every Child Matters. It can also deliver significant elements of Citizenship, PSHE (Personal, Social, and Health Education) and supports Personal Learning and Thinking Skills (PLTS).

Design and Technology

Students can consider how existing products are made and how they can be disposed of or recycled. For example

Grouping materials:

- Sort objects into groups on the basis of simple material properties (KS1)
- Recognise and name common types of material and recognise that some of them are found naturally (KS1)
- Find out about the uses of a variety of materials and how these are chosen for specific uses on the basis of their simple properties (KS1)

- That some materials are better electrical conductors than others (KS2)

Changing materials:

- Find out how the shapes of objects made from some materials can be changed by some processes, including squashing, bending, twisting and stretching (KS1)
- That burning materials results in the formation of new materials and that this change is not usually reversible (KS2)

When designing their own concepts students can consider the need to recycle as a design feature, and select materials and designs that facilitate this

Geography

Students can consider the use of raw materials by industry and consumers within any exploration of humans' interactions with their environments. How would a large-scale transition to a more recycling-led economy change current patterns of material flows, connections and effects?

Life processes and living things:

- Care for the environment (KS1)
- About the importance of sustainable development (KS4)

Science

Recycling technology is driven by science. Students can consider recycling as an example of how science has moral implications in how it is applied. They can also consider recycling in the context of how human activity uses energy and natural resources, and how these affect local and global environments, including their effect on global patterns of climate change.

Forces and motion:

- To recognise that when things speed up, slow down or change direction, there is a cause (KS1)
- About the forces of attraction and repulsion between magnets, and about the forces of attraction between magnets and magnetic materials Friction, including air resistance (KS2)
- How to determine the speed of a moving object and to use the quantitative relationship between speed, distance and time and that unbalanced forces change the speed or direction of movement of objects and that balanced forces produce no change in the movement of an object (KS3)
- How distance, time and speed can be determined and represented graphically (KS4)

Light and sound:

- That light travels in a straight line at finite speed in a uniform medium. How is reflected at plane surfaces and refracted at the boundary between two different material. That white light can be dispersed to give a range of colours (KS3)

Energy resources and energy transfer:

- About the variety of energy resources, including oil, gas, coal, biomass, food, wind, waves and batteries, and the distinction between renewable and non-renewable resources (KS3)

Breadth of study:

- Looking at the part science has played in the development of many useful things. Using a range of sources of information and data, including ICT-based sources (KS1; KS2; KS3)
- A range of domestic, industrial and environmental contexts. Considering ways in which science is applied in technological developments (KS3)

Communication:

- Use simple scientific language to communicate ideas and to name and describe living things, materials, phenomena and processes (KS1)
- Use appropriate scientific language and terms, including SI units of measurement, to communicate ideas and explain the behaviour of living things, materials, phenomena and processes (KS2)

Health and safety:

- Recognise that there are hazards in living things, materials and physical processes, and assess risks and take action to reduce risks to themselves and others (KS1 and KS2)

PSHE

Recycling is both a personal and a collective decision, driven by values and influenced by a range of information sources. Students can consider how the way they think about their environment is linked to wider concepts of self-awareness and self-esteem and consider how to make informed choices with better outcomes for themselves and their world

For more information on teaching resources such as free downloadable assemblies and lessons plans for both primary and secondary schools www.recyclenow.com/schools/index.html is well worth a look.

To arrange a tour of our MRF please contact us enquiries@jbrecycling.co.uk

