

# Recycle It

## The World Around Us

ICLs: What's the Issue? | Eco-Warriors  
Year 6/7



Cross Curricular Skills displayed/developed in this assessment task:

Using Mathematics	- Data Handling
Thinking Skills and Personal Capabilities	- Managing Information Thinking Problem Solving Being Creative Working with others Self Management

## What It's About

80,000 green bins worth of rubbish 'recycled' by U.K. homes has turned up unsorted in Indonesia. The 500 tonnes of waste was falsely described as waste paper by exporters. This activity gets children to think about effective reuse and recycling methods, taking into account the properties of materials. Children will consider how some materials can change or decay over time and the factors that can affect it.

## Where It Fits

### Change over time

- Ways in which changes occur over both short and long periods of time.
- Positive change and how we have a responsibility to make an active contribution.

### Key Question

- How do things change? (How waste can be reduced, reused or recycled and how this can be beneficial)

## Suggested Learning Intentions

- To present data and can talk about reasons for that method of presentation.
- To choose appropriate methods of presenting data.
- To ask deeper, more probing questions while challenging assumptions.
- To understand why some materials can be recycled.
- To understand how learning in science relates to news in the world around us.

## Discussion Starters

When the children are looking at the introductory task:

- Is it good to export recycled paper to other countries?
- Do we know how far our waste travels and what it is used for?

When the children are considering reuse of waste items:

- Is re-using waste items a good way of recycling?

## Running the Activities

1. Use the introductory paragraph on page 1 as a stimulus. Discuss the questions:

- What do we mean by recycling?
- Are there any items shown in the diagram that could be put into one group?
- Why would you put these items in a group?

(**Tip** The process of grouping the recyclable items in various ways could be made easier by cutting out the green boxes so that they can be physically sorted and grouped.)

2. Discuss various ways of presenting the data given in the table. If appropriate challenge the children working either individually or in groups to present the data in a suitable way.

3. Using the illustration and text on page 2 as a stimulus, discuss with the children the idea of plant material breaking down to form compost. Emphasise the idea that tiny living things (called microorganisms) use the plant material as food and this produces the compost.
  
4. Using the table on page 3 as a stimulus, ask the children to discuss in pairs or small teams the various suggestions for speeding up or slowing down the composting process. Encourage the children to support their views with science ideas.
  
5. Use the illustration on page 4 as a stimulus to introduce a further task. Encourage the children to think about the properties of the materials that the items are made from and to explain how these properties make the item suitable for a different use.

## Web links

[www.bbc.co.uk/schools/revisewise/science/materials/](http://www.bbc.co.uk/schools/revisewise/science/materials/)

A look at a range of science topics exploring the different facts children would like to know about materials and their properties. There are activities, fact sheets and quizzes on materials for children. See Grouping & Classifying.

[www.kidsrecycle.org/index.php](http://www.kidsrecycle.org/index.php)

A website for children and teachers including information about composting, recycling and waste reduction.

# Assessment for Learning Smart Grid\*

Use the Smart Grid to help the class review their learning. For additional information about how to use a Smart Grid view the 'How to use' guide.

Thumbs Up	We were great at the task because...	<p>We were able to put the waste items into groups based on what they were made from.</p> <p>We presented information about the waste material clearly by using...</p> <p>We knew which factors would speed up or slow down compost making.</p> <p>We could explain why each factor would speed up or slow down compost making.</p> <p>We had a great original idea for reusing a waste item.</p> <p>We could explain how the properties of the materials in the item we chose made it suitable for its new use.</p>	<p>Next time we will...</p>
Thumbs Sideways	We were good at the task because...		
Thumbs Down	We were OK at the task because...		

\* Smart Grids are part of the Smart Science series developed by the Centre for Science Education, Sheffield Hallam University

# Science at your Fingertips

## What is compost?

Compost is when plant material, such as garden and kitchen waste, decays it breaks down to form a rich soil-like material.

## Why is compost good for growing plants?

Compost contains lots of minerals that growing plants can use. It also holds a lot of water that growing plants can absorb through their roots.

## What can change how quickly compost is made?

Plant material breaks down because tiny living things (microorganisms) feed on it. The rate at which compost forms is affected by the types of things which provide suitable conditions for the microorganisms to grow and reproduce. Microorganisms need moist but not over wet conditions, a suitable temperature range and an open texture which allows air to circulate through the compost. For the suggestions in the table, some information is shown below.

- Mix some soil in with the waste plant material: this would speed up the composting process as the soil would contain lots of microorganisms that would quickly start to feed on the plant material.
- Put wee on the plant material: this would speed up the composting process, partly because it would make the compost heap damp but also urine is a source of nitrogen and potassium which some microorganisms need. Apparently putting too much urine on a compost heap isn't a good idea as worms don't like it!
- Dig the compost heap over every few weeks: this would speed up the composting as it would help to aerate the heap and would mix the microorganisms with the plant material.
- Water the compost heap so that it is damp but not soaking wet: this would speed up the process by providing a suitable amount of water. Soaking the heap would possibly slow the process down by excluding air and also cooling the heap down.

- Chop any tree branches or large plants up into small pieces: this would speed up the composting process by providing lots of plant surface area for the microorganisms to feed on.
- Tread on the heap to pack it down as much as possible: this would slow down the composting process by reducing air circulation.
- Cover the top of the heap with some old carpet and a polythene sheet: this would probably speed up the composting process by keeping out heavy rainfall and raising the temperature of the heap. As long as the lower part of the heap was open air would still be able to get in.
- Make the heap in a shady place: this could either speed up or slow down the process depending on the weather conditions. In cold weather the shady area would possibly be too cool for the microorganisms. However, in hot weather making the heat in a shady place would stop the heap getting too hot.

### **What can make an object suitable for a new use?**

The materials an object is made from will determine how it can be reused. To make the best use of a material it is important to know what its properties are, so we can choose the right material for the right job.

### **What sorts of properties can affect what materials are used for?**

Properties such as flexibility, thermal insulation value, resistance to wear, transparency, strength, water resistance, flammability, electrical conductivity, malleability – how easily the material can be shaped, etc. can all affect how a material is used.

# Connecting the Learning

## **Biodegradable bags**

Many supermarkets now say that their carrier bags are biodegradable. This means that if the bag is buried in the ground it will decay, break down and eventually disappear. How could you do a scientific investigation to find out which type of bag biodegrades quickest?

## **Sort, sort, sort**

At recycling stations there are sometimes containers for different types of plastic. Most plastic items are given a number to help with recycling. How many different types are there and what happens to all this plastic?

## **Antoni Gaudi**

The great Spanish architect Antoni Gaudi used bottles and broken tiles to give colour to the outside of many of his buildings. Can you find any other examples of artists who use recycled materials in their work? Can you create your own piece of artwork using recycled materials?