

waste audit

A numeracy activity addressing key elements of the National Numeracy Strategy (NNS) and investigating the amount of waste produced in class and the school

Relevant elements of the Year 4 NNS Teaching Programme (p 18-19)

Measures

- Use, read and write standard metric units, including their abbreviations
- Know the equivalent of one half, one quarter, three quarters and one tenth of ... 1kg.
- Suggest suitable units and measuring equipment to estimate or measure length, mass, or capacity
- Record estimates and readings from scales to a suitable degree of accuracy

Handling data

- Solve a problem by collecting quickly, organising, representing and interpreting data in tables, charts, graphs and diagrams, including those generated by a computer... bar charts in intervals labelled in 2s, 5s, 10s or 20s [200s, 500s – grams]

Problems involving 'real life', money and measures

- Use all four operations to solve word problems involving numbers in 'real life', money and measures using one or more steps...

Suggested lesson structure

Mental and oral starter

The lesson could begin with practising and reinforcing previous knowledge on calculating mentally half, quarter, three quarters or one tenth of kg weights. Children could also be challenged with reverse calculations, e.g. what is 500g or 2500g expressed as kg etc. Children could respond by writing answers on individual whiteboards.

Preparation for the main part of the lesson

Preparing for this part of the activity will involve some work outside the numeracy lesson.

Classroom rubbish will need to be collected over a period of one week and separated into its different materials. A small group of children could perhaps be responsible for ensuring that rubbish is saved and separated into its different parts.

Alternatively, at the beginning of the week, children could be asked to separate rubbish into different bags/bins for the week. This would be a good general exercise in itself, involving thinking about different forms of rubbish we create and separating it out at the point of discarding it. Developing such skills and habits are vital if we are to reduce waste and increase recycling.

After a week of collecting the rubbish, each material will need weighing. Different groups could each weigh a particular material and decide which measuring equipment is the most suitable for the task. (Spring balances, bathroom scales etc)

The main teaching activity

The main activity involves introducing and talking through the following tasks:

Children will be expected to complete the table and draw a bar chart before interpreting the data and answering the questions. Some bar charts could be generated on the computer. Less able pupils could complete the bar charts and Question 1. Questions 2 and 4 are aimed at more able children as they involve more complex calculations. It is assumed that there are no more than 10 classes in the school. Questions 3 and 5 are for wider discussion and should be considered in the plenary session or at another time outside the numeracy lesson.

Weight is the generally recognised method of measuring waste, but volume or bulk would be another method. Weighing waste fails to account for which types are most damaging to the environment. For example, plastic waste is generally light but often bulky and is non-biodegradable. Conversely food/green waste is generally heavier but will either rot or can be turned into compost.

Plenary session

The main purpose of the plenary session will be to share the information, interpret the bar charts and examine some of the waste issues raised through this activity. The information could be displayed somewhere prominently in the school for others to see.

A follow up exercise could involve children suggesting ways for the class/school to reduce its waste. A **Class/School Waste Reduction Action Plan** could be devised. The ideas could be tried and the amount of rubbish measured again a few months later to see if the amount of rubbish has decreased. See box on the back of this leaflet for suggestions.

Global Citizenship aims of the waste audit

- ✓ To help children understand the relationship between people and the environment
- ✓ To recognise the consequences of choices on other people and the environment both locally and globally
- ✓ To foster a sense of responsibility for the environment and for the use of resources
- ✓ To equip children with the knowledge and understanding to empower them to take positive actions which protect the environment

These aims are based on the Oxfam Curriculum for Global Citizenship, available from Oxfam Education, 274 Banbury Road, Oxford, OX2 7DZ

reduce



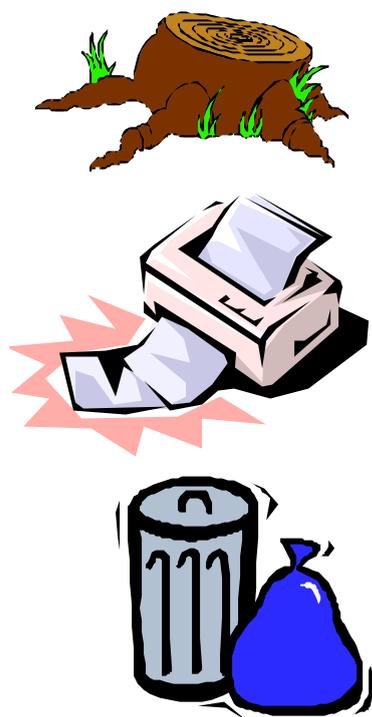
reuse

recycle

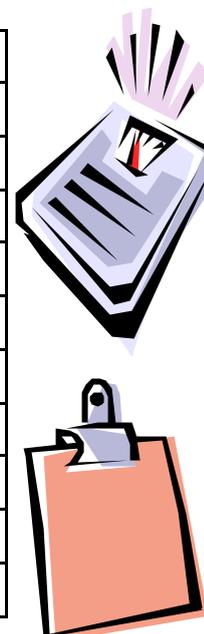
measuring classroom waste

The aim of this activity is to find out what sorts of rubbish are created in your classroom and which materials create the most rubbish.

Begin by weighing the amount of each material thrown away in your classroom over a week. Complete the table below and work out the total amount of rubbish created in one week.



Material	Weight in grams
Paper	
Cardboard	
Metal	
Glass	
Plastic	
Food and green waste	
Textiles	
Wood	
Other	
Total weight in Kg and grams	



Draw a bar chart to show the different materials thrown away in your classroom during one week.

Place the different materials along the bottom, horizontal axis and the weight in grams and kgs along the vertical axis. Mark on 200g intervals on the vertical axis.

Use the table above and your bar chart to answer the following questions:

- 1 Which material created the most and least waste by weight over the week?
- 2 If every class in the school throws away the same amount of rubbish as your class, what would be the total amount of waste created by all the classes in one week? Answer using kg and grams.
- 3 Which of the materials above could be recycled or reused rather than thrown away?
- 4 If these materials are reused or recycled, by how much could your classroom waste have been reduced?
- 5 Do you think weight is a good way of measuring waste? What other ways could you use to measure the amount of waste created?

Further resources

The following titles offer opportunities for further activities on issues of waste and recycling for KS2.

Protecting our environment: a practical guide to waste minimisation. A resource pack for Key Stage 1 & 2 produced by the Tower Hamlets Waste Education Project. Features a host of facts and figures on waste as well as pupil activities and curriculum links. Available from HEC (contact details on back page) Price: £14.95 inclusive of postage and packaging.

The Dustbin Pack. A resource for Key Stage 2 produced by *Waste Watch*. Contains teachers notes, children's fact sheets and activities on waste and its impacts and the potential for reduction through reuse and recycling. Available free to schools (contact details on back page)

Useful websites on waste and recycling

Waste Watch: www.wastewatch.org.uk Click on schools and kids, then 'Fun for kids' option for games, activities, quizzes, facts and figures on waste.

Recycle-more: www.recycle-more.co.uk/b2s/intro.html A schools section of the site for both teachers and pupils who want to learn more about how to tackle waste. Includes activities, games and information on waste and recycling.

Environment Agency: www.environment-agency.gov.uk/kids contains information, environmental games, and animations for children on waste and other environmental issues.

Feedback on these activity ideas would be much appreciated. Comments can be sent to HEC or your local DEC or made via the Global Footprints website.

Further ideas, contacts and information

Sustainable sustenance activity

This activity aims to examine the extent and nature of rubbish created through packed lunches. Children investigate what happens to their packed lunch rubbish and consider how this could be reduced. The activity would be particularly useful after an event or outing in which all children in the class/group have packed lunches.

Suggested format of activity

Each child counts the number of pieces of rubbish from their packed lunch and writes down what they are.

Children should then pool their waste/leftovers to demonstrate the total waste and the total number of pieces of rubbish can be calculated.

Children should next discuss what happens to waste from this point on, i.e. enabling children to think 'beyond the bin' to understand that rubbish is buried or burnt.

At this point 3Rs can be introduced and discussed - **Reduce, Reuse, Recycle** - in relation to the different categories /materials of rubbish from the packed lunches. For example: cans (recycling), plastics (some areas now offer plastic recycling schemes, other items such as bottles, tubs etc. could be reused), organic waste (some may be compostable), paper/ cardboard (recycling)

Finally, consider the most important 'R': **Reduce**. Discuss this in relation to packed lunches, e.g. using reusable lunch boxes for sandwiches rather than foil or plastic bags, decanting from large bottles to refillable plastic bottles for drink rather than buying small individual cartons or cans etc. Ask children to consider again their packed lunches and the amount of rubbish they created and brainstorm in pairs/groups how they could change their packed lunches to reduce the amount of rubbish. They could then design a poster to promote their ideas around the school.

Based on an activity idea provided by the Lancashire Global Education Centre

School Waste Reduction Action Plan

Here are some ideas that might be included in an action plan to reduce waste in school:

- ◆ Set up a recycling scheme for paper in the school
- ◆ Ensure both sides of all paper is used before paper is recycled
- ◆ Use scrap paper for rough work and casual notes
- ◆ Reuse envelopes
- ◆ Have separate bins in the playground and in classrooms for different types of rubbish
- ◆ Decant or make up drinks from large bottles and put them into smaller reusable bottles rather than buying individual cartons/cans/bottles
- ◆ Avoid heavily packaged food for packed lunches; use a lunch box which can be reused again and again rather than tin foil or plastic
- ◆ Reuse plastic pots, trays and other packaging for storage of classroom equipment, in artwork or for growing plants in
- ◆ Make sure that a collection/recycling method exists in school for the collection of glass and aluminium cans or encourage children to take cans home for recycling
- ◆ Ensure that reusing and recycling of old/outgrown clothes is encouraged, e.g. second hand collections available to children, collection of old clothes for charity shops



Further information about waste

The following organisations will be able to provide further information on waste and recycling

Oxfam 274 Banbury Road, Oxford OX2 7DZ Tel:01865 313600

Produce a range of global citizenship education packs.

Education catalogue contains extensive range of resources across the curriculum. To order phone 01202 712933. Also have a website dedicated to teachers and children which contains information and activities: www.oxfam.org.uk/coolplanet

Friends of the Earth 26-28 Underwood Street, London N1 7JQ

Tel: 020 7490 1555 www.foe.co.uk

Produce information sheets and other resources suitable for young people on all environmental issues including waste and recycling.

Waste Watch Europa House, Ground Floor, 13 - 17 Ironmonger Row, London EC1V 3QG Tel: 0870 243 0136

www.wastewatch.org.uk

A national charity with cross-sector support which aims to educate, inform and raise awareness on waste reduction, reuse and recycling.

Eco schools Tidy Britain Group, The Pier, Wigan, WN3 4EX www.eco-schools.org.uk

A Europe wide project designed to encourage whole-school action for the environment. Operate an award scheme for schools who adopt an action plan to make environmental improvements in the school community

Development Education Centres (DECs)

This resource has been produced by the Humanities Education Centre, a DEC in Tower Hamlets, with contributions from other DECs. Your local DEC will be able to provide a range of exciting resource ideas for the teaching of Global Citizenship. To find your nearest DEC contact:

Development Education Association,
29-31 Cowper Street, London, EC2A 4AP

☎ 020 7490 8108 e-mail devedeassoc@gn.apc.org

Your local DEC :