



SCIENCE YEAR 5-6 Cycle A – Unit 4

Recycling

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RANGE

Sustainable Earth

6. a consideration of what waste is and what happens to waste that can be recycled and that which cannot be recycled

KEY VOCABULARY

solid
liquid
gas
evaporation
condensation
reversible
irreversible
dissolve
soluble
insoluble
mixture
reuse
recycle
variables
line graph
reliability
scale

Developing thinking

(Plan-Develop-Reflect
integrated into activities)



LNF - Main Numeracy Strands covered*

Strand:

Developing numerical reasoning.

Element:

*Identify processes and connections.
Represent and communicate,
Review.*

Strand:

Using measuring skills.

Element:

*Length, weight/mass, capacity.
Temperature.
Area and volume, angle and position.*

Strand:

Using data skills.

Elements:

*Collect and record data, Present and analyse data,
Interpret results*

**Refer to LNF Numeracy framework for details of specific skills within each element*

LNF – Literacy (writing) opportunities

Element: Organising information and ideas
Writing accurately

Writing to inform, instruct and persuade

Developing ICT



School to identify and provide opportunities for developing this skill within the scope of the unit.

Curriculum Cymreig



School to identify and provide opportunities for developing this skill within the scope of the unit.

Personal and social education



School to identify and provide opportunities for developing this skill within the scope of the unit.

Science – Medium Term Planning (half term)

Year Group	5-6	Term	Cycle A – Unit 4	Unit Title	Recycling
Range: Sustainable Earth 6. a consideration of what waste is and what happens to waste that can be recycled and that which cannot be recycled					
Cross Curricular Links:					
Skills (Principal skills in bold italics)	Suggested activities			Resources and web links	Assessment Opportunities
PLAN <i>Identify gaps in prior knowledge</i> Ask relevant questions	1. Big Question: What are your opinions about recycling? Changing Materials: NGfL KS2 science Review pupils' ideas from Unit 3 about the nature of materials, changing state and how some everyday materials are formed or produced. Consider using: <ul style="list-style-type: none">An odd-one-out activity or online interactive activities.A graffiti board/question wall of pupils' questions. Also, review key vocabulary from Unit 3, including: solids, liquids, gases, melting, cooling, freezing, evaporation, condensation, reversible, irreversible. Introduce/recap on dissolving. Explore a variety of everyday materials/foodstuffs – which dissolve? Describe what happens. Explain using scientific language. Reuse or recycle? Recycling: SEM Unit 3 <ul style="list-style-type: none">Ask the pupils to consider what they understand by the terms reuse and recycle.In pairs, record their ideas about rubbish in the form of a concept map on a 'Rubbish Enquiry Leaflet'. Annotate accordingly.Ask pairs to share and explain their ideas.List questions pupils would like to answer. How will they go about answering these questions? Do pupils need to undertake practical enquiry work, research or questionnaires?			http://resources.hwb.wales.gov.uk/VTC/2009-10/science/earths-materials/index.html http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/E22-The-Earth-s-Resources/index.html http://www.recycling-guide.org.uk/rrr.html http://www.wasteawarenesswales.org.uk/recycle/index.html http://www.recyclezone.org.uk/ SEM Unit 3	Use preferred diagnostic strategy/tool

<p>PLAN <i>Identify key variables in a fair test</i></p> <p><i>Outline plan/method</i></p> <p>DEVELOP Use equipment and apparatus correctly and safely</p> <p>REFLECT Describe how they have learned</p>	<p>2. Big Question: What affects how quickly a solid dissolves in water?</p> <p>Changing Materials: NGfL KS2 science. Discuss examples of changing state and then aspects of dissolving from Activity 2. Explain concepts using simple models.</p> <p>Review question and discuss which key variables affect the rate at which sugar/salt dissolves in water.</p> <p>Introduce the skill – Identifying key variables and plan method Use Concept Cartoons and/or card sort activity to trigger discussion/debate:</p> <ul style="list-style-type: none"> How will pupils explore and answer this question? Groups discuss and outline a plan/method. What factor will they change? (e.g. mass of solid, temperature of water etc.) What will they measure? How will they record their findings? What equipment will pupils require? <p>Practise the skill – Identifying key variables and plan method</p> <ul style="list-style-type: none"> Pupils undertake the fair test enquiry. Tabulate their findings. Some pupils may elect to use the datalogger to measure temperature Discuss findings? What do pupils notice? What are the conclusions they can draw from their work? Can pupils suggest improvements to their method(s)? 	<p>http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e24-changing-materials/index.html</p> <p>http://www.bbc.co.uk/education/subjects/z2pfb9q</p> <p>Concept Cartoon template</p> <p>Interactive planning templates</p>	<p><i>Can pupils recognise variables with support? (Level 4)</i></p> <p><i>Can pupils recognise all key variables? (Level 5)</i></p> <p><i>Can pupils use scientific knowledge and skills to plan? (Level 4)</i></p> <p>Can pupils draw conclusions and form considered opinions? (Level 4)</p>
<p>PLAN <i>Plan the process/method to be used</i></p> <p>Control hazards and risks</p> <p>DEVELOP <i>Make careful observations</i></p> <p><i>Explain using prior knowledge</i></p> <p>REFLECT Link learning to similar situations within and outside school.</p>	<p>3. Big Question: How do we recycle (recover) dissolved solids from water?</p> <p>Review findings from previous task. Review methods of removing large particles (sand/grit etc.) from water. Can we use sieving as a method for removing sand/sugar from water? How can we achieve this? Discuss examples of clothes drying and puddles evaporating etc. Introduce/review concept of evaporation.</p> <p>Set question in the context of recycling/recovering both insoluble and soluble solids from water, (e.g. sand and salt) and/or cleaning dirty water.</p> <p>Introduce the skill – Make careful observations and explain findings</p> <ul style="list-style-type: none"> How can we set up a test to find out how to speed up the evaporation process? Discuss pupils' ideas. What are the key variables? (e.g. temperature of water, area and depth of water.) Plan method – focus on developing systematic plans. <p>Practise the skill – Make careful observations and explain findings</p> <ul style="list-style-type: none"> Select equipment and identify success criteria for practical work. Carry out fair test investigation, controlling relevant variables. Discuss findings and identify patterns and trends. Consider producing cartoon strip (using computer software, e.g. Comic Life) to communicate work. <p>To write to inform Text type: science write-up/report</p>	<p>http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e24-changing-materials/index.html</p> <p>http://www.bbc.co.uk/education/subjects/z2pfb9q</p>	<p><i>Can pupils make qualitative observations and use standard equipment to measure using SI units? (Level 4)</i></p> <p><i>Can pupils select the measuring instruments that allow them to make accurate measurements? (Level 5)</i></p> <p>Can pupils identify patterns and trends? (Level 4)</p>

<p>COMMUNICATION Search for relevant scientific information</p> <p>PLAN Outline how to find relevant information</p> <p>DEVELOP <i>Distinguish between fact, belief and opinion</i></p> <p>REFLECT Suggest how the method could have been improved</p>	<p>4. Big Question: Where does our rubbish go? Should we use landfill sites?</p> <p>Recycling: SEM Unit 3</p> <p>Introduce the skill – Distinguish between fact, belief and opinion</p> <ul style="list-style-type: none"> Discuss how a lot of rubbish is kept in landfill sites. Assess pupils ideas/opinions about landfills as a brief survey/questionnaire. Consider researching the opinions of families and friends via a homework questionnaire. Consider using the internet to search for information about landfill sites in their local area and in other parts of Wales. The pupils could show the location of landfill sites on a map of Wales or in their local authority area. Discuss the distribution of landfill sites. What are the implications for locating landfill sites in certain locations? <p>Practise the skill – Distinguish between fact, belief and opinion</p> <ul style="list-style-type: none"> As the groups collect information, ask them to write some of the effects of these landfill sites on post-it notes. Their notes should include arguments for and against landfill sites. Can pupils start to distinguish the difference between fact, belief and opinion. Record their ideas about the effects of landfill sites on a poster or on their interactive white board. They could stick their post-it notes showing the arguments 'for' and 'against' next to each other. As a class/group, create a poster including arguments for and against. Encourage pupils to communicate some of their findings as tables/bar charts (e.g. questionnaire findings). <p>To write to inform and persuade Text type: Publicity poster</p>	<p>SEM Unit 3</p> <p>http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e24-changing-materials/index.html</p> <p>http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/E22-The-Earth-s-Resources/index.html</p>	<p><i>Can pupils distinguish between facts, beliefs and opinions? (Level 4)</i></p> <p>Can pupils find and use a variety of evidence, information and ideas? (Level 4)</p> <p>Can pupils find and use relevant evidence, information and ideas? (Level 5)</p>
<p>COMMUNICATION Communicate using tables, bar and line graphs</p> <p>PLAN Plan method/approach</p> <p>DEVELOP <i>Make comparisons and identify patterns/trends in data</i></p> <p>REFLECT Suggest how the method could have been improved</p>	<p>5. Big Question: Can we improve recycling in school?</p> <p>Recycling: SEM Unit 3 Changing Materials Activity 6: NGfL KS2 science</p> <p>Introduce the skill – Make comparisons and identify patterns/trends in data</p> <ul style="list-style-type: none"> Ask the pupils to take an empty plastic bag to every class in order to collect all the paper they usually throw away during a school day. Then, ask them to design a method of recording the mass of waste paper collected from each class on the Enquiry Form. <p>Practise the skill – Make comparisons and identify patterns/trends in data</p> <ul style="list-style-type: none"> Pupils may plan to collect and record the mass of waste paper collected from each class daily. Encourage pupils to use tables, bar charts and SI units (kg) during their work. Create a bar chart to communicate findings. Discuss findings. What patterns/trends can they identify in their data? Use the results to write an annual recycling audit report to the school council. Consider presenting recommendations to the school governors. <p>To write to inform and persuade Text type: non-chronological report</p>	<p>SEM Unit 3</p> <p>http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e24-changing-materials/index.html</p> <p>http://www.bbc.co.uk/education/subjects/z2pfb9q</p>	<p><i>Can pupils identify patterns and trends? (Level 4)</i></p> <p><i>Can pupils construct their own tables and bar charts? (Level 4)</i></p> <p><i>Can pupils draw conclusions and form considered opinions? (Level 4)</i></p> <p>Can pupils draw conclusions and consider others' views to inform opinions/decisions? (Level 5)</p>

<p>COMMUNICATION Communicate clearly by speech, writing and drawings</p> <p>PLAN Search for relevant information</p> <p>Ask relevant questions</p> <p>DEVELOP Form considered opinions and make informed decisions</p> <p>REFLECT Link learning to similar situations within and outside school</p>	<p>6. Big Question: What exactly have I purchased?</p> <p>Recycling: SEM Unit 3</p> <p>Introduce the skill – Form considered opinions and make informed decisions</p> <ul style="list-style-type: none"> Ask every pupil to bring something from home which is packaged e.g. food, CD, batteries etc. In groups, examine and discuss the materials used for packaging and whether the packaging is necessary. Encourage the pupils to think about the advantages or disadvantages of the packaging. <p>Practise the skill – Form considered opinions and make informed decisions</p> <ul style="list-style-type: none"> Ask the pupils to draw a picture showing everyday packaging materials. Ask them to draw another picture to show the new packaging material that they have designed. Record their ideas in a table on the Enquiry Form. Develop an argument, either 'for' or 'against' packaging materials, and present their argument to the class. They could ask different people for their opinions: parents, teachers and other pupils. Present their arguments in chosen format. <p>To write to inform and persuade (using ICT) Text type: poster or advert</p>	<p>SEM Unit 3</p> <p>http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e24-changing-materials/index.html</p>	<p><i>Can pupils draw conclusions and form considered opinions? (Level 4)</i></p> <p><i>Can pupils draw conclusions and consider others' views to inform opinions/decisions? (Level 5)</i></p>
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<p>PLAN <i>Select success criteria</i></p> <p><i>Consider hazards and risks</i></p> <p>DEVELOP Use equipment correctly and safely</p> <p>REFLECT <i>Evaluate outcomes against success criteria</i></p> <p>Describe how they have learned</p>	<p>7. Big Question: Can you make your own recycled paper? or 7. Big Question: Can you make a water recycling (cleaning) device?</p> <p>Introduce the questions. Changing Materials: NGfL KS2 science. Activity 6 Paper and Recycling: OAM Unit 7</p> <p>Introduce the skill – Set success criteria and consider risks/hazards</p> <ul style="list-style-type: none"> Challenge pupils to identify one of the problems to solve. Select idea/task and plan method. Identify success criteria for a method and practical work. Consider health and safety and practicality of chosen recipe. <p>Practise the skill – Set success criteria and consider risks/hazards</p> <ul style="list-style-type: none"> Remind pupils of their success criteria. Pupils to follow plan/method. Review success criteria and evaluate outcomes. Consider creating an information fact file card for an African aid charity to help villagers understand how to remove particulates and salt from water (NB Emphasise to pupils that although the water appears 'clean' it still cannot be considered safe to drink. <p>To write to inform and instruct Text type: fact file or non-chronological report</p>	<p>OAM Unit 7</p> <p>http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e24-changing-materials/index.html</p> <p>http://www.mikecurtis.org.uk/ks2/mixtures.htm</p>	<p><i>Can pupils select success criteria? (Level 4)</i></p> <p><i>Can pupils select and justify success criteria? (Level 5)</i></p> <p><i>Can pupils follow the planned method and use standard equipment? (Level 4)</i></p>
<p>COMMUNICATION <i>Communicate clearly by speech, writing and drawings</i></p> <p>DEVELOP <i>Form considered opinions and make informed decisions</i></p> <p>REFLECT Describe amendments to the planned method/approach</p>	<p>8. Big Question: How can we persuade more people to recycle?</p> <p>Recycling: SEM Unit 3</p> <p>Introduce the skill – Communicate clearly by speech, writing and drawings</p> <ul style="list-style-type: none"> Explain to the pupils that they are to make a presentation to each other. The purpose of the presentation is to make the audience aware of the matters associated with recycling and to raise awareness of recycling in the local area. Discuss success criteria. <p>Practise the skill – Communicate clearly by speech, writing and drawings</p> <ul style="list-style-type: none"> In groups, ask the pupils to think about what they now know about waste and recycling. Discuss and share their ideas with the class. Ask pupils to make notes of their main ideas, and then consider how they will convey their message in the form of a short presentation. They could note their ideas on the Enquiry Form. Encourage them to think about an interesting way of presenting their information, e.g. art, flash cards, posters, charts, video clips etc. Perform their presentation before an audience. The pupils could write and perform a rap about waste and recycling. This could be uploaded onto the school website. 	<p>SEM Unit 3</p> <p>http://resources.hwb.wales.gov.uk/VTC/2009-10/science/earths-materials/index.html</p>	<p><i>Can pupils communicate using relevant scientific language, including tables and charts? (Level 4)</i></p> <p><i>Can pupils organise and communicate their findings integrating different forms in various presentations? (Level 5)</i></p>
<p>REFLECT <i>Describe how they have learned, and identify the ways that worked the best.</i></p> <p>Link the learning to similar situations, within and outside school.</p>	<p>Revisit initial diagnostic assessment. Can pupils demonstrate understanding at end of topic and discuss new skills learned and/or practised?</p> <p>Review pupils understanding of key concepts: solids, liquids, gases, melting, cooling, freezing, evaporation, condensation, reversible, irreversible, dissolving, soluble, insoluble.</p>	<p>Use preferred AfL strategy</p>	<p><i>Can pupils describe how they have learned and identify the ways that worked the best? (Level 4)</i></p> <p><i>Can pupils identify the thinking/learning strategy they used? (Level 5)</i></p>
Evaluation			

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