



## Narrative – The greenhouse effect

<b>Year group and curriculum area</b>	Year 10. Science/biology/chemistry/physics.
<b>Activity</b>	This activity is based on: <ul style="list-style-type: none"><li>analysing and interpreting information presented as images and text, in order to develop a scientific argument.</li></ul>
<b>Topic</b>	Energy; global warming/greenhouse effect; sustainability; space (Earth and its atmosphere).
<b>Possible strategy</b>	<p>The purpose of this activity is to provide materials for learners to:</p> <ul style="list-style-type: none"><li>read and interpret information presented in variety of formats</li><li>select useful information to carry out the task</li><li>make links with other topics and prior knowledge in science</li><li>solve problems</li><li>present scientific arguments</li><li>draw evidence-based conclusions.</li></ul> <p>Learners use the image showing how the greenhouse effect occurs to produce a written explanation of the effect, and how it helps to sustain life on Earth. In particular, the aim is to concentrate on producing a coherent, well-reasoned argument. (Teachers could use writing frames/classroom discussions/pair or group work to support this activity.)</p> <p>Learners need to understand the relevance of the similarities between Venus and Earth which led scientists to once believe that life was possible on Venus (size, cloud formation, water vapour in the atmosphere, etc.). However further exploration has identified key differences between the planets and provided evidence of the catastrophic consequences of the greenhouse effect on Venus several million years ago.</p> <p>The image provided on the activity sheet is designed to help learners produce a written explanation of the greenhouse effect, e.g. huge amounts of carbon dioxide and water vapour in the atmosphere led to more radiation being reflected back to the surface of the planet. Further evaporation of water into the</p>

	<p>atmosphere to form thick clouds caused more pronounced overheating in an uncontrolled way.</p> <p>Learners may want to link this with their knowledge of the electromagnetic spectrum including the type of radiation and the change of wavelength of the radiation being reflected compared with that coming directly from the sun.</p> <p><b>Links with climate change on Earth</b></p> <p>This has similarities with what is happening on Earth at present with the rise of greenhouse gases in the atmosphere, including carbon dioxide and water vapour from burning fossil fuel and from car emissions. This is evidenced by climatic changes, droughts (see images on activity sheet).</p> <p>One way to counter this effect would be to reduce the amount of fossil fuel emissions, reducing the carbon dioxide and water vapour in the atmosphere. Draw evidence to support this from global campaigns in the news.</p>
<p><b>Links with the LNF</b></p>	<p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Generating and using a strategy to solve problems.</li> <li>• Working collaboratively to solve a problem.</li> </ul> <p><b>Literacy component</b></p> <p><b>Strand: Oracy across the curriculum</b></p> <p><b>Element: Developing and presenting information and ideas</b></p> <p><b>Aspect: Speaking</b> Learners are able to:</p> <ul style="list-style-type: none"> <li>• present ideas and issues to meet the demands of different audiences</li> <li>• speak fluently, using a range of techniques, expressions and gestures</li> <li>• use formal language in a range of contexts</li> <li>• respond to how listeners react, and adapt their use of language for different contexts and purposes</li> <li>• sustain a convincing point of view, anticipating and responding to other perspectives, <i>e.g. in role or debate</i></li> <li>• Welsh-medium statement: use a range of mutations correctly (soft, nasal and aspirate mutations) in context.</li> </ul> <p><b>Aspect: Listening</b> Learners are able to:</p> <ul style="list-style-type: none"> <li>• respond to the ideas of others in thoughtful and considerate ways, seeking clarification through appropriate questioning</li> <li>• listen to a range of information and ideas from different</li> </ul>

	<p>viewpoints, identifying how different speakers present specific points of view.</p> <p><b>Aspect: Collaboration and discussion</b> Learners are able to:</p> <ul style="list-style-type: none"> <li>• use a range of options and strategies to enable the group to progress and reach agreement.</li> </ul> <p><b>Strand: Reading across the curriculum</b></p> <p><b>Element: Locating, selecting and using information</b></p> <p><b>Aspect: Reading strategies</b> Learners are able to:</p> <ul style="list-style-type: none"> <li>• use their knowledge of: <ul style="list-style-type: none"> <li>– word roots and families</li> <li>– grammar, sentence and whole-text structure</li> <li>– content and context</li> </ul> to make sense of words, sentences and whole texts</li> <li>• use a range of strategies, <i>e.g. speed reading, close reading, annotation, prediction</i>, to skim texts for gist, key ideas and themes, and scan for detailed information, extracting and commenting on key ideas and themes</li> <li>• use the internet to search selectively, assessing the reliability and significance of what they find.</li> </ul> <p><b>Element: Responding to what has been read</b></p> <p><b>Aspect: Response and analysis</b> Learners are able to:</p> <ul style="list-style-type: none"> <li>• compare and contrast themes and issues across a range of texts and make text-to-text connections</li> <li>• independently research a wide range of sources to develop a full understanding of unfamiliar topics or issues</li> <li>• synthesise and analyse information to gain in-depth understanding from sources which may have conflicting views</li> <li>• understand and distinguish between facts/evidence and bias/argument commenting on both obvious points and inferences</li> <li>• comment on different interpretations of issues and ideas, using the text to support opinions</li> <li>• evaluate the purpose, impact and reliability of texts.</li> </ul> <p><b>Strand: Writing across the curriculum</b></p> <p><b>Element: Organising ideas and information</b></p> <p><b>Aspect: Meaning, purposes, readers</b> Learners are able to:</p> <ul style="list-style-type: none"> <li>• write both extended pieces, which include detailed</li> </ul>
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	<p>evidence and information, and shorter pieces which summarise concisely, showing clear awareness of the reader or intended audience</p> <ul style="list-style-type: none"> <li>• construct responses that connect and develop ideas to fully cover the topic.</li> </ul> <p><b>Aspect: Structure and organisation</b> Learners are able to:</p> <ul style="list-style-type: none"> <li>• improve the content, structure and accuracy of their writing through independent review and editing</li> <li>• write independently in an appropriate form with increasing confidence, ensuring content is organised, detailed and relevant, <i>e.g. how best to present opinions, information and explanations</i></li> <li>• organise writing in an appropriate form, ensuring content is detailed within and between paragraphs or sections.</li> </ul> <p><b>Element: Writing accurately</b></p> <p><b>Aspect: Language</b> Learners are able to:</p> <ul style="list-style-type: none"> <li>• use language to convey objectivity and impartiality, acknowledging that there may be more than one viewpoint, <i>e.g. arguably, it can be seen that ...</i></li> <li>• use a wide range of technical terms, appropriate vocabulary, and expression for different purposes and to create different effects, <i>e.g. to persuade, inform, entertain.</i></li> </ul> <p><b>Aspect: Grammar, Punctuation, Spelling, Handwriting</b> Learners are able to:</p> <ul style="list-style-type: none"> <li>• vary sentence structures to engage and sustain the reader's interest and write with grammatical accuracy</li> <li>• use the full range of punctuation in order to vary pace, clarify meaning, avoid ambiguity and create deliberate effects</li> <li>• use a variety of strategies and resources to accurately spell an increasing range of familiar, unfamiliar and subject-specific words</li> <li>• present their handwritten or on-screen work effectively, choosing form, images and graphics to enhance meaning</li> <li>• Welsh-medium statement: write grammatically accurate sentences ensuring that the verb tense and person is correct in context</li> <li>• Welsh-medium statement: use a range of mutations correctly (soft, nasal and aspirate mutations) in context.</li> </ul>
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