

## Lesson #21: Whatchygonnadoaboutit?

<b>Stage 1 – Desired Results</b>	
<b>Established Goals: GLO B:</b> Explore problems and issues that demonstrate interdependence among science, technology, society and the environment	
<b>GLO C:</b> Demonstrate appropriate inquiry, problem-solving and decision-making skills and attitudes for exploring scientific and/or technological issues and problems	
Understandings: Students will understand that...1. Mental models can be powerful because they can change the way that resources are TAKEN (or not taken), how we MAKE products and how we deal with (or do not produce) WASTE	Essential Questions: <b>SLO B5:</b> Identify and demonstrate actions that promote a sustainable environment, society and economy (locally/globally)
Students will know... 1. The mental model presented in the Millennium Ecosystem Assessment	Students will be able to...1. Describe projects they will participate in/initiate
<b>Stage 2- Assessment Evidence</b>	
Knowledge: 1. Examples of ecosystem services (marketed and non-marketed)	Skills: 1. Engage in those activities they describe – self report or survey in a few months
<b>Materials Required</b>	
Powerpoint Presentation ““Examining Our Mental Models”” Display boards HANDOUT: The Hanging Baskets Project (Source: Your career and sustainable development: a scientists for global responsibility briefing. (2003). Kent, UK: Scientists for Global Responsibility (SGR)). Students need originals (or copies) of “Mental Models” worksheet (from Lesson: Sharing Mental Models) “Letter to Earth” (from Lesson: Restabilizing Earth-4 Guiding Ideas) HANDOUT: What do you Think?	
<b>Stage 3 – Learning Plan</b>	
1. READ “The Hanging Baskets Project” and answer questions on sheet. 2. <b>Slide 43 &amp; 44:</b> Do a Think-Pair-Share with the two questions on the overhead “Based on your mental models...what do YOU depend on ecosystems for...what do ecosystems depend on you for?”. First they think individually and record their thoughts in 2 columns. Then they pair up and share ideas. Then they share the ideas (EVEN the ones that are the same as other groups – explain to them that we are looking for most common responses. 3. As a large group *comment first on which column had the most items. We depend on nature for a great deal but really it just depends on us treating it reasonable decently so that it can maintain its structure and function. *RECORD the answers directly on <b>Slide 45</b> under the appropriate categories – regulating, provisioning, cultural, supporting. The goal here is to see whether all categories have items listed or whether “marketable”- provisioning – ecosystem services are more frequently thought of than non-marketed – all other categories. 4. <b>Slide 46</b> - Demonstrate this model (which is adopted from the Millennium Ecosystem Assessment) 5. <b>Slide 47</b> - Share this “other half” of the model. Highlight *arrows vary in thickness and color to show how strong the link is between each item of our well-being and each item that ecosystems provide *human well-being <b>DEPENDS</b> on how well ecosystems can “do” what they do (which is	

one “selfish” reason why we should make sure that we do not impede nature from its normal structure or function.

\*which “constituents of Human Well-Being” they were mostly thinking of during the Think-Pair-Share

\*how others around the world would have different constituents of well-being (ex: some people’s lack of freedom greatly affects their access to water, for example (ie a thick arrow on the diagram)

6. **Slide 48 & 49** - Help students reflect on their well-being and brainstorm concrete physical actions that they will engage in A.S.A.P. (ie NOW). Ensure that these are made precise and try to have a commitment by students that the class will follow up on. Decide when the follow-up will be

7. **Slide 50** – Reflect on their experience with their product, the multitude of skills they needed to be able to work toward consensus in a group! Bravo!

8. Revisit “Mental Models” worksheet that began in Lesson: Sharing Mental Models and the “Letter to Earth” in Lesson: Restabilizing Earth-4 Guiding Ideas. Have students think (not verbalize) of any changes/additions/deletions to their previous mental model description.

9. **Slide 51** - HANDOUT: “What do you think?” Complete the Final Report item #50 What do you Think? first and then the other items. Ensure students know that they can write more and attach it and they can write about anything they feel was not asked on the questionnaire as well.

10. **Slide 53** – Thanks! (to students and to you) Be sure to allow time to debrief the whole experience with students.

**Remember to fill in a questionnaire as well!**

**Complete photocopying!**

**Be prepared for a focus group**

**Extension Learning Activities**

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A Scientists for Global Responsibility briefing

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*Thinking About an Ethical Career in Science and Technology* is intended to give young scientists and engineers an understanding of the wider ethical dimensions of various careers in science and technology. Each briefing focuses on an area in which science and technology can play a major role, either good or bad, and examines the social and environmental controversies in that area. It then gives guidance on how to make an informed, 'ethical' career choice. For further details about the series and a full list of the briefings currently available, see [www.sgr.org.uk/ethics.html](http://www.sgr.org.uk/ethics.html) or contact us (details below).

The *Thinking About an Ethical Career in Science and Technology* series is edited by Vanessa Spedding and Dr Stuart Parkinson, Scientists for Global Responsibility (SGR). SGR's ethical careers project advisors are: Dr Alan Cottey; Dr Tim Foxon; Dr Barry Rubin; Dr Philip Webber.

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#### The hanging baskets project

A group of people decide to brighten up their community by putting up some hanging baskets for summer. They decide to buy all the necessary components. They purchase a PVC bowl with a metal bracket fabricated in India by children. The bowl contains peat and is decorated with sphagnum moss. The basket chain is made from aluminium from Germany. The plants are flown in from Holland and tap water; artificial fertilisers complete the picture. Two days after they are put up, local kids pull some down and one gets thrown through a shop window.

This hanging basket is a symbol of un-sustainability at its worst, posing as an environmental improvement. Prettiness hides child exploitation, environmental desecration and high energy and resource use and the local community feels no sense of ownership.

Let's instead assume that our basketeers do some better advance planning. Rather than taking their garden cuttings to the local tip and throwing away their waste food they compost waste for a year and build up a stock of good quality compost. They then involve local schools who have been encouraging pupils to plant seeds and grow them on to seedlings as part of the National Curriculum. A local craftsperson is commissioned to make a wooden bracket and to use UK-produced galvanised steel chain. The bowl is made from a bio-degradable plastic produced from recycled plastics. The formerly sphagnum moss lining is achieved by use of a waste wool material. Local people and children from the schools are involved in placing and hanging the baskets and each has one to look after.

The net result is the same product but with dramatically reduced environmental impacts, no child exploitation, some local job creation (or support) and a sense of community pride. This same approach has, in reality, led to the creation of a sustainable hanging basket service and several jobs (in West Yorkshire, UK).

This is still simplistic. Why would local kids want hanging baskets anyway? Now that the Indian children cannot sell the brackets how can they support their family? Will they resort to less savoury occupations? Other solutions, based on similar approaches, to these parts of the problem are required. There are major buyers such as B&Q who are developing a social conscience and developing health and safety programs for children and other employees with unacceptable working practices to reduce the risks to them and the local environment. Fair trade agreements can also result in better wages.

The beauty of this type of approach is that it can be applied to almost anything, from a major dam project to a local play area.

*A Better Quality of Life – a strategy for sustainable development for the UK (DETR 1999)* is an update on the first strategy published in 1994. A fully updated strategy is planned by 2005.

*Local Agenda 21, a comprehensive action plan at the local level for the 21st Century*, first drawn up at the 1992 Earth Summit in Rio de Janeiro, should now be integrated into Community Strategies, which all local authorities and "Local Strategic Partnerships" have to draw up. Early guidance documents were produced by the (now defunct) Local Government Board.

Various new regional bodies have drawn up Regional Sustainable Development Frameworks. The content of these is subject to continual revision but try for example <http://www.yorkshirefutures.com/> or <http://www.oursouthwest.com/>.



**“The Hanging Baskets Project”**

1. Record the 4 ways in which the project was different but had the same “net result”.

a)

b)

c)

d)

2. Refer to the display boards. Complete this Venn Diagram about what is similar and what is different about human’s and nature’s mental models about TAKE, MAKE and WASTE.

3. Can mental models be changed? Why/why not?