A RESOURCE FOR TEACHING AND LEARNING ABOUT

Consuming Planet Earth
A resource for teaching and learning about

CONSUMING PLANET EARTH
Writers Wendy Smith, Jeff Su, Monica Bini

Acknowledgements

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Ecorecycle Victoria for permission to reproduce information from the Waste Facts fact sheet
EPA Victoria for permission to reproduce their Victorian ecological footprint
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Having our cake, and eating it too, Melissa Fyfe, 30/04/2005
New buildings must be bike-friendly, Dan Silkstone, 06/10/2004
The Sunday Age for the following article:
Labels could save $6600m of water, Phillip Hudson, 05/12/2004
United Nations, for permission to reproduce population data from their World Population Prospects: the 2004 Revised Population database
Vox Bandicoot Pty Ltd. for permission to reproduce the Sustainability Street photograph and water usage pie chart
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World Wildlife Fund and the Center for a New American Dream for permission to reproduce material from the I Buy Different website: www.ibuydifferent.org

Community Support Fund

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In 2004, Consumer Affairs Victoria (CAV) launched its Consumer Education in Schools program with resource books for teachers of Years 9-11 Commerce, English and Mathematics, as well as a website and a new Consumer Stuff Challenge competition. In 2005, two new cross-curricular books were added to the resources, Consuming Planet Earth and Health and Wellbeing.

The aim of the Consuming Planet Earth resources is to encourage young consumers to develop the knowledge, skills and behaviours to make informed decisions based on understanding the need for more sustainable consumption.

The activities in Consuming Planet Earth encompass a broad range of related issues including the impact on the environment of: population growth, rising living standards and consumerism, increasing energy and water usage, and the loss of natural resources. The activities aim to encourage schools, students and families to explore ways of reducing their impact on the environment, for example, using energy and water-saving products, as well as other environmentally-friendly goods and services.

Consuming Planet Earth has been written to meet a variety of different needs and each unit can be used as a stand alone, independent resource. However, the material has also been designed to support a whole school planning approach to sustainability within the new Victorian Essential Learning Standards. Consumer Affairs Victoria hopes that schools will find this book to be a valuable resource and integrate it into their whole school sustainability education program.

Other resource books are available for teachers of Commerce, English and Mathematics. In addition, a cross-curricula resource, Health & Wellbeing, has been developed to support the teaching of health, home economics, physical education and personal development. Teachers may find relevant activities in more than one resource book. For instance, activities relating to the influence of print and electronic advertising on consumer spending can be found in Commerce, English, Health & Wellbeing and Consuming Planet Earth.

Consumer Affairs Victoria may be able, as part of an ongoing program in your school, to provide a Community Education Officer to speak to student groups. Your school would need to integrate the role of the speaker into your teaching and learning activities. For more information call (03) 8684-6465.

Gamblers Help Services may also be able to provide a community educator to speak to your students. For more information, contact your local service via Gamblers Help Line on 1800 858 858.
The Victorian Essential Learning Standards are structured around the knowledge, skills and behaviour all students from P-10 should acquire in three core, interrelated strands of essential learning: Physical and Social Learning; Discipline-based Learning; and Interdisciplinary Learning. These three components are viewed as essential to prepare students for a rapidly changing and globalised world in which they have the capacity to:

- manage themselves as individuals and in relation to others
- manage the world in which they live, and
- act effectively in that world.

The Learning Standards require an interwoven approach to curriculum across the three strands of essential learning and this is reflected in Consuming Planet Earth.

*The Victorian Essential Learning Standards: Overview* (March 2005, VCAA) provides the example of teaching environmental sustainability in a way that draws on the full range of interdisciplinary domains as well as being embedded in areas such as Science, Geography and Economics and recognises that students will need to create a future which is sustainable, innovative and creates strong communities.

Consuming Planet Earth has been designed to reflect the innovative new which encourages a whole school approach to curriculum planning.

The curriculum mapping of the student worksheets on pages 7 and 8 demonstrate the cross-curricula nature of this resource book. The introductory activities and the many extension tasks have also been designed to reflect the three strands of essential learning, particularly at Levels 5 and 6.
## Victorian Essential Learning Standards

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### OC: Oral communication
- EI: Exploring issues and problem solving
  - PP: Practical Purposes
  - K: Knowledge

### N: Numeracy
- PP: Practical Purposes
- PO: Personal Organisation
- IS: Interpreting Society
  - K: Knowledge

### PDS: Personal Development Skills

#### Notes:
1. The activities align to the learning outcomes listed but may not cover all the assessment criteria. Please check the relevant Curriculum Planning Guide to ensure all assessment criteria are covered.
2. The VCAL level is not named for each Unit or worksheet. Most can be modified for use at the different VCAL levels from Foundation through to Senior, with a major difference being the level and amount of assistance, support and guidance given to the learner.

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<td>WORKSHEET E1: What do I want?</td>
<td>R – SE, OC – EI, W – SE</td>
<td>IS, PP</td>
<td>Most Learning Outcomes in PDS Unit 1 would be covered, especially if students work in pairs or small groups on some of the activities in order to cover the team work and leadership Learning Outcomes for PDS Unit 1.</td>
</tr>
<tr>
<td>WORKSHEET E3: What is it really going to cost?</td>
<td>R – K, W – SE, K, PP, PD</td>
<td>PO</td>
<td>Depending on which Extension activities were undertaken, there is the potential to cover both PDS Units.</td>
</tr>
<tr>
<td>EXTENSION/REVISION</td>
<td>W – SE, PP, PD, OC – EI, PP</td>
<td>IS, PP</td>
<td></td>
</tr>
<tr>
<td><strong>SECTION F. Wealth, Consumption and Happiness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WORKSHEET F1: Is happiness about having more and more money?</td>
<td>W – K, SE, R – K, PP</td>
<td>IS, PP</td>
<td>Most Learning Outcomes in PDS Units 1 and 2 would be covered, especially if students work in pairs or small groups on some of the activities in order to cover the team work and leadership Learning Outcomes for PDS Unit 1.</td>
</tr>
<tr>
<td>WORKSHEET F2: Social sustainability and problem gambling</td>
<td>W – K, SE, R – K, PP</td>
<td>IS, PP</td>
<td></td>
</tr>
</tbody>
</table>
Links to the Victorian curriculum

Victorian Certificate of Education (VCE)
The activities in this resource book can assist students to meet the following outcomes.

<table>
<thead>
<tr>
<th>VCE Economics</th>
<th>Unit 1</th>
<th>Outcomes</th>
<th>1, 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit 2</td>
<td>Outcomes</td>
<td>1, 2</td>
</tr>
<tr>
<td></td>
<td>Unit 3</td>
<td>Outcome</td>
<td>1</td>
</tr>
<tr>
<td>VCE Environmental Science</td>
<td>Unit 1</td>
<td>Outcomes</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>Unit 2</td>
<td>Outcomes</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>Unit 3</td>
<td>Outcomes</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>Unit 4</td>
<td>Outcomes</td>
<td>1, 2</td>
</tr>
<tr>
<td>VCE Food and Technology</td>
<td>Unit 1</td>
<td>Outcomes</td>
<td>1, 3</td>
</tr>
<tr>
<td></td>
<td>Unit 2</td>
<td>Outcomes</td>
<td>2, 3</td>
</tr>
<tr>
<td></td>
<td>Unit 3</td>
<td>Outcomes</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>Unit 4</td>
<td>Outcome</td>
<td>1</td>
</tr>
</tbody>
</table>

Vocational Education and Training (VET)
The activities in this resource book can assist students meet outcomes in the following VET programs:
- Building and Construction
- Horticulture
- Sport and Recreation

<table>
<thead>
<tr>
<th>VCE Geography</th>
<th>Unit 1</th>
<th>Outcomes</th>
<th>1, 2, 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit 2</td>
<td>Outcomes</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>Unit 3</td>
<td>Outcomes</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>Unit 4</td>
<td>Outcomes</td>
<td>1, 2, 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VCE Health and Human Development</th>
<th>Unit 1</th>
<th>Outcome</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit 3</td>
<td>Outcomes</td>
<td>1, 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VCE Outdoor and Environmental Studies</th>
<th>Unit 1</th>
<th>Outcomes</th>
<th>1, 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit 2</td>
<td>Outcomes</td>
<td>1, 2</td>
</tr>
<tr>
<td></td>
<td>Unit 3</td>
<td>Outcomes</td>
<td>1, 2</td>
</tr>
<tr>
<td></td>
<td>Unit 4</td>
<td>Outcomes</td>
<td>1, 2</td>
</tr>
</tbody>
</table>
### The Thinking Curriculum

#### Multiple intelligences

<table>
<thead>
<tr>
<th>Verbal/linguistic</th>
<th>Letter writing, word searches, debates, role plays, interviews with consumers and traders, interpreting energy rating labels and analysing advertising techniques.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical/mathematical</td>
<td>Problem-solving, surveys, analysing and interpreting statistics eg. calculating the running costs of household appliances, and CO2 emissions from different modes of transport.</td>
</tr>
<tr>
<td>Visual/spatial</td>
<td>Maps, cartoons, board games, graphs, and the design of website material, posters and packaging material.</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Co-operative group work, discussions, interviews, group investigations and consumer awareness campaigns.</td>
</tr>
<tr>
<td>Intrapersonal intelligence</td>
<td>Reflective journals, self-assessment and setting personal goals.</td>
</tr>
<tr>
<td>Bodily/kinaesthetic</td>
<td>Role plays, excursions to markets and shopping centres to better understand consumers and traders.</td>
</tr>
<tr>
<td>Musical/rhythmic</td>
<td>Writing songs and jingles on sustainability and other consumer themes.</td>
</tr>
<tr>
<td>Naturalist</td>
<td>Conducting experiments and investigations, eg. the issue of genetically modified foods, the value of eco-tourism holidays.</td>
</tr>
</tbody>
</table>

#### Thinking skills

As well as knowledge about their rights and responsibilities, consumers also need the skills to think critically and creatively.

Creative thinking techniques have been used where possible to develop students’ lateral and ‘deep’ thinking skills, for instance, Six Thinking Hats developed by Dr Edward De Bono:
- **Red Hat** for feelings, intuition and emotions
- **White Hat** for information
- **Green Hat** for creative thinking
- **Black Hat** for critical thinking
- **Yellow Hat** for positive thinking
- **Blue Hat** for ‘thinking about thinking’ ie working out the order of the ‘Hats’ and deciding what other thinking techniques to use.

#### Emotional intelligence

The value of teaching emotional intelligence is also recognised and incorporated into a number of activities eg. discussions about consumerism, stereotyping and the influence of advertising.

Dr Daniel Goleman’s *Emotional Intelligence* identified key elements associated with emotional intelligence:

<table>
<thead>
<tr>
<th>Self awareness</th>
<th>Recognising personal strengths and weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-regulation</td>
<td>The ability to control impulses and accept responsibility for one’s own actions</td>
</tr>
<tr>
<td>Motivation</td>
<td>This includes having commitment and drive</td>
</tr>
<tr>
<td>Empathy</td>
<td>The ability to understand other people’s feelings and point of view</td>
</tr>
<tr>
<td>Social skills</td>
<td>This includes the ability to co-operate with others and communicate effectively</td>
</tr>
</tbody>
</table>

Groupwork, roleplays and reflective journals are just some of the activities designed to improve these skills.
Sustainable Consumption Theme Days/Weeks

There are a variety of theme days and weeks that can be linked to issues covered in this resource book and incorporated or integrated into your school program. Some examples are listed below.

<table>
<thead>
<tr>
<th>Month</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>February</td>
<td>Sustainability Month&lt;br&gt;Sustainability Festival</td>
</tr>
<tr>
<td>March</td>
<td>World Consumer Rights Day&lt;br&gt;Clean Up Australia Day&lt;br&gt;World Water Day</td>
</tr>
<tr>
<td>April</td>
<td>Earth Day</td>
</tr>
<tr>
<td>May</td>
<td>Education Week</td>
</tr>
<tr>
<td>June</td>
<td>World Environment Day</td>
</tr>
<tr>
<td>July</td>
<td>School Tree Day</td>
</tr>
<tr>
<td>September</td>
<td>Biodiversity Month&lt;br&gt;National Threatened Species Day</td>
</tr>
<tr>
<td>October</td>
<td>National Walk to Work Day&lt;br&gt;National Water Week&lt;br&gt;Zero Waste Week&lt;br&gt;World Food Day</td>
</tr>
<tr>
<td>November</td>
<td>National Recycling Week</td>
</tr>
</tbody>
</table>

Sustainable Consumption School Initiatives

There are a number of initiatives that can also be linked with the themes of the book. Some examples are listed below.

- Sustainable Schools Initiative
  - Australian Sustainable Schools Initiative (AuSSI) – Commonwealth Department of the Environment and Heritage
  - Victorian Sustainable Schools Initiative (VicSSI) – Victorian Department of Education and Training
    - [www.ceres.org.au](http://www.ceres.org.au)
    - [www.gould.edu.au](http://www.gould.edu.au)
- AirWatch – EPA Victoria
- Waste Wise schools – Ecorecycle and the Gould League
  - [www.gould.edu.au](http://www.gould.edu.au)
- Water Watch Victoria – Victorian Department of Sustainability and Environment
SECTION A
Consuming the planet

Aims and overviews
In this unit students will explore definitions of sustainability and sustainable consumption and consider the need for sustainable behaviour in their own lives, as well as in local and global communities.

Key concepts
Sustainability, sustainable consumption, needs and wants, consumer culture, rights and responsibilities of consumers, ecological footprint, thinking and acting globally.

Learning outcomes
At the end of the unit students should be able to:
- demonstrate an understanding of the relationship between consumer spending and scarce natural resources by calculating their ecological footprint
- explain the environmental consequences of purchasing decisions
- assess their own ability to think about and influence the future.

Background information
There are many definitions of ‘sustainability’: ‘sustain’ originally comes from the Latin sustenare which means to ‘hold up’ or support. While there is disagreement about the extent to which the environment has been degraded and what measures should be taken to improve the situation, the following facts and figures demonstrate that Planet Earth is under stress and in need of support.

- According to a recent EPA report, the average Victorian household needs 8.1 global hectares of land to sustain their lifestyle. If everyone on the planet lived like Victorians, we would need four Planet Earths to support us.
- In 1954 an average Victorian household had only six appliances: kettle, radio, toaster, fridge, lamp and heater. By 2004, the average home had collected 30 appliances.
- A recent CSIRO report shows that climate change could cut Melbourne’s water supply by 35 per cent by 2050.
- Approximately 15 percent of the planet’s land has been degraded due to deforestation, overgrazing and mismanagement.
- Half the world’s rivers have been seriously depleted and polluted.
- Only 0.08 percent of the earth’s water is available for use and water demand has more than tripled in the past 50 years.
- Oil consumption has increased sevenfold in the past 50 years.
- Around 12 percent of the world’s population is in North America and Western Europe and accounts for 60 percent of household consumption.
- Households in developed nations throw away up to 800 kg of waste each year compared to less than 200 kg in poorer nations. This ‘waste’ includes many goods that have simply been discarded because a new, ‘improved’ model has been released.
- It has been estimated that by 2007 half the world’s population will be urban, which will increase pressure on scarce natural resources and non-renewable energy sources.
- About 1.7 billion people have entered the ‘consumer class’ in recent years, according to the WorldWatch Institute, adopting the diets, transport systems, and lifestyles of the developed nations. In China, India and other developing nations, energy and resource use is rising rapidly as more people gain access to goods and services that consumers in the wealthy nations take for granted: cars, washing machines, refrigerators, computers and internet access, mobile phones and so on.
The World Wildlife Fund’s Living Planet Report, 2002 warned that:

‘If every human alive today consumed natural resources and emitted carbon dioxide at the same rate as the average person in the developed world, then we would need at least another two Planet Earths, if not three’.

The report was based on scientific data from around the world.

There is a need, therefore, to achieve sustainable development, which is a balance between economic prosperity and the environment to ensure a good quality of life for everyone today without damaging the planet for future generations. Governments, businesses and consumers all have a role to play in achieving that goal. Governments can, for example, encourage businesses and consumers to reduce their energy use by making energy rating labels on some appliances mandatory. Businesses continue to develop more energy efficient appliances and consumers can encourage their production by creating a demand for them. Consumer campaigns can be very effective, for example, the growing rejection of plastic bags in supermarkets and other stores.

Resources
- Ecological footprint www.ecofoot.org
- Energy Rating www.energyrating.gov.au
- WorldWatch Institute www.worldwatch.org/
- Unesco www.unesco.org > Education > UN Decade of Education for Sustainable Development
- Australian Bureau of Statistics
  www.abs.gov.au > Statistics > Australian current population > ABS Population Clock
- Victorian Department of Sustainability and Environment www.dse.vic.gov.au > Interactive Maps > Biodiversity Interactive Map
SECTION A
Consuming the planet

Introductory Activity
Ask the class to recall when and where they may have heard the word ‘sustainability’ or ‘sustainable’. Write the responses on the board, using the table below as a guide, and then ask the students to go through the list individually and decide what was meant by using the word in that context.

<table>
<thead>
<tr>
<th>When</th>
<th>Where</th>
<th>What context/meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Test the students understanding of the term ‘sustainability’ and its opposite, by asking them to complete the following sentences.

My family understands the need to act sustainably because every week we...

Our school encourages students to act sustainably by...

Tao’s neighbours obviously do not know what sustainability means because they...

My definition of sustainability is...

I think I could live more sustainably by...

...
World population growth

In the last 200 years, technological advances in agriculture and medicine have led to increased birth rates and decreased death rates and the world’s population has grown considerably. Two key questions are: ‘How will the population continue to grow?’, and ‘What population level can the planet sustain?’ (also known as the Earth’s carrying capacity).

Exercise 1 - Future population growth

a) Calculate the percentage increase in global population from 2010 – 2050 for each decade.

b) Calculate what the world population will be in 2100 assuming the trend continues, and add to the table below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Population in billions</th>
<th>Percentage Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>6.08</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>6.84</td>
<td>12.5%</td>
</tr>
<tr>
<td>2020</td>
<td>7.57</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>8.19</td>
<td></td>
</tr>
<tr>
<td>2040</td>
<td>8.70</td>
<td></td>
</tr>
<tr>
<td>2050</td>
<td>9.07</td>
<td></td>
</tr>
<tr>
<td>2100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: United Nations
World Population Prospects: The 2004 Revised Population database (medium variant figures)

c) In the space provided, create a line graph from the data or produce one using MS Excel or a similar software program. Include a label for the graph.
World population growth

d) Briefly describe the trend in estimated population growth and compare your answer with classmates.


e) Suggest at least two factors which may limit population growth.


Did you know?

The electricity to run the little clocks and lights on your VCR and microwave in Standby mode account for an eighth of all household energy-related greenhouse gas emissions! That’s about the same that it takes to run your fridge! Turn off non-essential appliances at the wall, or buy products with low standby power use.

*ABC Planet Slayer factoid*
It’s not just numbers

The issue of shrinking global resources is not just about population numbers. Natural resources are not used equally by all the countries in the world. According to WorldWatch’s *State of the World Report, 2004*, people living in the developed countries of North America, Western Europe, Japan, Australia and New Zealand, for example, comprise just 12 percent of the world’s population and consume 61 percent of the world’s resources. North America consumes 400 times more resources than Ethiopia, and twice the resources of Germany, Japan, and the UK.

*State of the World 2004, Special Report on Consumption*  

Exercise 1 - How big is your footprint?

A convenient way to combine the effects of population growth and resource consumption is the Ecological Footprint. The footprint is an estimate of the amount of land and water needed to produce a society’s resources and absorb its wastes. If the planet’s resources are divided equally, every person would get 1.8 hectares of productive land and sea. In Bangladesh, the average ecological footprint per person is about 1 hectare. In Victoria the average is 8.1 hectares (Australian average is 7.7 hectares and the USA is 9.5 hectares per person). If everyone on the planet lived like Victorians we would need four Planet Earths, not one.

a) Examine the EPA Victoria footprint, read *The Age* article and then answer the following questions:

**Having our cake and eating it too**

If Victoria’s eco-status were a bank account we would be in the red.

| Life is good in Victoria. In fact, if all the world lived as ravenously, four planet Earths would be needed to supply the resources. For the first time, the Environment Protection Authority has calculated what Victorians demand of nature to sustain la dolce vita. And the news is sort of embarrassing. Each Victorian has a global “footprint” bigger than the average Australian. Only Kuwait and the United Arab Emirates tax the planet more. An ecological footprint is the land and water area needed to produce a society’s resources and absorb its wastes. Divide the world’s resources into its population and each person gets 1.8 hectares of productive land and sea. Each Victorian, however, uses 8.1 hectares (the Australian average is 7.7). So if the state’s dependence on nature is like a bank account, we are in overdraft. |
| The EPA report comes as the State Government vows to tackle environment woes with a new authority, Sustainability Victoria, and a framework that, says Environment Minister John Thwaites, will underpin “everything we do as a state”. The biggest contributor to the Victorian footprint is food, particularly red meat and dairy. Victorians also eat more seafood, drive further and use more energy in homes. But our wealth is at the core of our elephant-sized footprint. The more we earn, the more we consume. The EPA is asking Victorians to peel back their profligate ways: eat one meal fewer of red meat each week, catch public transport, set up a teleconference meeting instead of flying to Sydney, buy green power and stop wasting food (last month an Australia Institute report found the nation wasted $5.3 billion on all forms of unused food in 2004). |
| “We are not asking people to reduce the wealth we have,” says Terry A’Hearn, the EPA’s director of sustainable development. “It’s about working out the things we want and applying our human cleverness to come up with ways that use less of the planet and create less waste.” The State Government has also released a Commonwealth Scientific and Industrial Research Organisation analysis on Victoria’s sustainability, which rings alarm bells. |
| Victorian landscapes, says the CSIRO, are “probably the most stressed in the country”, a legacy of clearing 70 per cent of the state, and intensive agriculture. About 35 per cent of the state’s major rivers are in poor or very poor condition, and 44 per cent of native plants are thought to be extinct or threatened. Meanwhile, our water use has spiralled: between 1984 and 1997, the use of groundwater has increased by 202 per cent. |

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“We are not asking people to reduce the wealth we have,” says Terry A’Hearn, the EPA’s director of sustainable development. “It’s about working out the things we want and applying our human cleverness to come up with ways that use less of the planet and create less waste.”
It’s not just numbers

One of the report’s authors, Barry Fordham, said the CSIRO team found Victoria’s situation surprising.

“You have this subjective impression that Victoria is a green state, but when you look at the indicators in an objective way, you notice it is a very highly impacted state,” he said.

The CSIRO’s most startling finding was that more than 3 million hectares could lose productivity - due to erosion, soil salinity and acidity - by 2050. In future, less water will flow to Victoria’s dams and in its rivers, says the CSIRO, because of climate change, reforestation and other factors.

These are the predictions that will drive sustainability. The CSIRO predicts farmers will squeeze more from their crops with each litre of water, waste less of their liquid gold, move into different products, and revive land by reserving some for native vegetation.

To avoid degrading the land, Victoria must switch some farming to high rainfall areas and irrigate less, says the CSIRO. Sustainability - living well within the earth’s capacity in a way that does not deplete resources - is still a concern of the minority in Victoria, but is slowly catching on in some of the biggest board rooms.

BP’s green office program in Melbourne has cut waste to landfill by 84 per cent since 1997, and saved more than a $1 million in paper and power costs. Lend Lease’s retail group is using the ecological footprint calculation to reduce the impact across its shopping centres, including Melbourne Central.

The Australian Conservation Foundation’s vice-president, Peter Christoff, said the ecological footprint and the Government’s sustainability framework focused on the behaviour of individuals and businesses.

But he said a few government decisions - such as extending the life of Australia’s most polluting power station, Hazelwood, and building a new freeway - could lock people into “patterns of consumption that we would rather not pursue”.

WHAT MAKES UP OUR FOOTPRINT
An analysis of Victoria’s Footprint results shows that the largest contributor to the total Footprint is food, followed by goods, and then housing. On the basis of their contribution to the total Victorian Footprint, the Footprint activity categories are ranked in the following order:

1 FOOD
The consumption of plant-based and animal-based food products, including the Footprint associated with food production, processing, packaging, storage and transport.

2 GOODS
The consumption of products and materials and their associated end-of-life disposal.

3 HOUSING
The consumption of land and resources for the construction and maintenance of housing, and the residential consumption of electricity, natural gas, and other fuels.

4 SERVICES
The consumption of services, such as water, sewerage, medical and telephone, and their associated resource costs.

5 MOBILITY
The consumption of fuel for personal transport and associated energy, and the transport infrastructure, such as roads, rail and air, needed for transportation.

LINK
www.epa.vic.gov.au/Eco-footprint

It's not just numbers

Components of Victorian Footprint

1. What is meant by the term 'ecological footprint'?

2. Summarise the reasons why Victoria has a larger footprint than the Australian average.

3. Why do wealthy nations such as Australia have larger footprints than poorer nations?

4. Summarise the impact of a large footprint on Victoria's environment.

5. List 3 of the EPA's suggestions for reducing Victoria's footprint.
   i) __________________________
   ii) __________________________
   iii) __________________________

6. Go to www.ecofoot.org, calculate your own ecological footprint and complete the table below.

<table>
<thead>
<tr>
<th>Components</th>
<th>My Footprint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td></td>
</tr>
<tr>
<td>Mobility</td>
<td></td>
</tr>
<tr>
<td>Shelter</td>
<td></td>
</tr>
<tr>
<td>Goods/Services</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Average for country</td>
<td></td>
</tr>
<tr>
<td>Number of planets</td>
<td></td>
</tr>
</tbody>
</table>

Components of Victorian Footprint

Food: 10%
Consumption Goods: 11%
Housing: 19%
Services: 23%
Transport: 37%
It’s not just numbers

7. After examining the pie chart on activity contributing to Victoria’s footprint, and calculating your own footprint, add some of your suggestions for reducing the state’s footprint. Compare your ideas with the rest of the class.

8. a) Outline some advantages and disadvantages of using the footprint as a tool for measuring environmental stress.

b) What other factors could be taken into account?

9. According to *The Age* article, Victorians are ‘munching resources faster than they regenerate’. Create a cartoon, poem, website or song which sums up the EPA warning.
 worksheet

Treading lightly in the great outdoors

Tourism is now one of the world’s largest industries and one of its fastest growing economic sectors today. Like other sectors, tourism uses resources, generates wastes and creates environmental, cultural and social costs and benefits during its process.

Outdoor activities are fun and healthy but as more and more people are visiting our natural places their impact is increasing. Litter from people, introduced species, weeds carried by car wheels, emissions from snow mobiles and 4WD vehicles are all potential threats to natural systems.

Eco-tourism has become increasingly popular but not all holidays using that label offer environmentally sensitive tourism. As with energy, water products and vehicles, holidays have accreditation schemes. The activities below will help you tread lightly when exploring the great outdoors.

Exercise 1 - What is our impact?
The impact on plants and animals and ecosystems can come in many forms. Different activities may have physical impacts such as trampling, erosion, auditory impacts including loud noises that disrupt animal communication or human enjoyment, pollution impacts such as emissions from engines or litter left over from people. For each of the following activities give one example of a potential physical, auditory, and pollution impact and rate the severity of the impact from 1-10.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Physical Impact</th>
<th>Auditory Impact</th>
<th>Pollution Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountain Biking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snow Mobiles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overnight Camping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bushwalking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bird Watching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fishing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rock climbing</td>
<td>(add your own example)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Did you know?

Many people think Australia’s electricity is ‘clean and green’. Apart from Tasmania, almost 90% of electricity is made by burning coal, the fossil fuel with the highest greenhouse impact.

ABC Planet Slayer factoid
Exercise 2 - Leave no trace
Set up a mock campsite in the school grounds. Place different kinds of litter around, for example, food scraps, chip packets, water bottles, plastic bags and paper. Take digital photos of the area. Sort out the litter into different categories and complete the following sentences.

Removing our Trace - Taking and Leaving

Let’s pick up the plastic litter!

If I leave the plastic litter it would...

Let’s pick up the food scraps!

If I leave the food scraps...

Let’s make sure we leave NO TRACE!

If I take a stone/flower home then...

If we all take a stone/flower home then...

If all visitors took a stone/flower home then...

Once the area has been restored, take some more digital photos. When back in the classroom, display the before and after photos you have taken at the campsite and write a short reflective summary of what leaving no trace means to you.
Exercise 3 - A free holiday!
Imagine you and your family have won a free holiday to a destination of your choice in Australia. You want to convince your family to have a genuine environmentally friendly holiday.

a) Identify accredited ecological holiday suppliers.
   – Type ‘ecotourism Australia’ into a web search engine.
   – Using the following descriptions, how many of the first ten found are:
     Ecotourism - nature holidays involving wildlife watching?
     Ecotourism - holidays where measures have been taken to reduce your impact on the local environment and increase integration with the local community?

b) Visit the Eco Tourism Australia website www.ecotourism.org.au and identify the logo used to indicate ecotourism holidays within Australia and internationally.
   Create a logo that could be used to identify ecotourism holidays in Victoria or your local area.

b) Continue your research and select your preferred holiday destination.
   Explain your choice in the table below.

<table>
<thead>
<tr>
<th>Our destination will be</th>
<th>Insert images which support your reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why I chose this destination</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>The impact of our holiday on the environment will be...</td>
<td></td>
</tr>
<tr>
<td>Positive impact</td>
<td>Negative impact (include travel to and from the destination)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>To reduce the negative impact we could....</td>
<td></td>
</tr>
</tbody>
</table>

d) Create a poster or webpage to explain to the general public the benefits of the ecotourism accreditation scheme and the importance of ecotourism.
1. A Consuming puzzle!
Below is the start of a crossword puzzle based on material covered in this chapter. Solve the puzzle and then add between 5-7 new words (with suitable clues). Test the new clues out on classmates and revise the puzzle if necessary.

Across
5. It’s all around us!

Down
1. The total number of people
2. What we leave behind us
3. People who use goods and services
4. Saving from loss or decay
Consuming the planet

2. Find the good news stories!
   Working in small groups, find a ‘good news story’ about what is being done in your local community to encourage sustainable consumption. For example, www.mefl.com.au/household/project/14, will lead to the successful Sustainability Street project below.

   Decide which of the organisations you would like to contact. Request an interview with the Education Officer or other suitable person. Prepare a visual display or design a webpage for the class on the organisation and suggest ways in which the school could assist with the organisation’s environmental initiatives.

   The class as a whole could decide on one particular action they would like to follow up, then using appropriate software, create a project plan with timelines, and then report to the whole school when the project is completed.

Sustainability Street.
Berry St, Reynard St, Ewen St and Deakin St, Moreland City Council Area

Summary - Sustainability Street is an exciting community development and environmental program where local communities get together to learn a bit about ecological sustainability and then do what they can to encourage, assist or “teach” other individuals or communities to join the groundswell. Sustainability Street is helping people transform their homes and neighbourhoods into sustainable green environments. It’s a great success because of the sense of community and ‘localness’, and the emphasis on having fun. Everyone wants to create a safer and healthier living environment for themselves and their children and this initiative is helping to achieve that. It’s a social initiative where the best outcomes for the community can be realised by bringing people together with a variety of knowledge and resources.
Principles of good interviewing

- Think about what information you want to gain from the interview.
- Try to write open-ended questions that involve more than a ‘Yes’ or ‘No’ response.
- Questions should:
  - be asked one at a time
  - be worded clearly
  - not all start with ‘Why?’
- Try and memorise the key questions. You may not be able to literally go through them one by one.
- You may want to practise the interview in advance – so that it will go smoothly!
- Arrive on time with plenty of paper to take notes, and thank the interviewee for making time available for the interview. If you want to tape the interview and/or take photographs, ask in advance.
- Learn to take notes from your conversation without it interfering with the discussion.
- Review your questions at the end of the interview to make sure you’ve addressed them.
- Practise the interview in advance with a classmate.

3. My home’s a tourist attraction!
Imagine that you have been given the opportunity to turn your garden or nearest open space into a destination for local tourists and overseas visitors. Write a plan detailing:

- how you would develop the site into an attraction
- what infrastructure and services you would need eg. toilets, signs
- how you would promote it and who to
- what measures you would put in place to protect it
- what measure you would put in place to ensure your neighbours were not inconvenienced
- how you would ensure that the wider community benefited from your venture as well as yourself
- how you would get it accredited as an ecotourism attraction.

Did you know?

An ordinary 100 watt light bulb generates a kilogram of greenhouse gas every 10 hours it runs, while a low voltage halogen lamp generates a kilogram every 15 hours and a compact fluorescent lamp every 50 hours.

*ABC Planet Slayer factoid*
Consuming the planet

4. **Who cares about their footprint?**
An Australian Bureau of Statistics (ABS) survey in 2004 found that:
- about 57 percent of Australians claimed they were concerned about the environment
- The level of concern had declined continually since 1992 (75 percent)
- in 12 months prior to March 2004 almost 3 million Australians aged 18 and over donated some money or time to help protect the environment
- 82 percent of households had a water conservation device eg. dual flush toilet (75 percent) or reduced flow shower head (44 percent)
- the most popular water conservation measures included using full loads when washing dishes and clothes and taking shorter showers
- in 2004 almost 9 in 10 households (89 percent) reported buying ‘environmentally friendly’ products
- 67 percent purchased recycled paper products
- most environmentally friendly products showed a small decline in usage with cost being the main reason for not buying them.

Based on ABS statistics from publication 4602.0 *Environmental Issues, Peoples Views and Practices*

In small groups, and using the above data, design a survey to test the concern of members of your community about the environment and what ‘environmentally friendly’ purchases they are making. Each group should contribute four questions. Each question should be designed so that the interviewees can answer either:

- **Yes** □
- **Strongly Agree** □
- **No** □
- **Agree** □
- **Don’t Know** □
- **Don’t know** □
- **Disagree** □
- **Strongly Disagree** □

Combine the questions into one survey for all students to use. The class will need to decide how many people each student should interview.

Each group can then collate their results and present the findings to the class. Determine the most appropriate form of presentation for your results eg. bar graphs, pie charts. Draw conclusions comparing your community’s attitudes to the ABS findings. Are they better or worse?

Work with your group to determine how you will present your findings to your local community. Can you establish a plan of action that will result in more environmentally friendly behaviour in your community? How can you test the effectiveness of your plan of action?
SECTION B
Buy ‘green’, save money

Aims and overview
Students will explore the costs and benefits of being a ‘green consumer’, and learn how to select environmentally friendly products and create an energy efficient home.

Key concepts
The 3 Rs (reduce, reuse, recycle), composting, energy ratings, energy efficient homes.

Learning outcomes
At the end of the unit students should be able to:
– interpret the information contained on energy rating labels
– apply the concepts of reduce, reuse and recycle
– design a survey to evaluate the energy efficiency of their homes.

Background information
Energy is such an essential part of modern day life that we often use it, without thinking, to heat and cool our homes and schools, run the many appliances in our homes, and fuel our cars. Most of the electricity in Australia comes from burning fossil fuels such as coal, gas and oil and this produces carbon dioxide – leading to what is known as the Greenhouse Effect. The average household’s energy use is responsible for about 8 tonnes of carbon dioxide (CO2), the main greenhouse gas, per year. Many of these emissions can be reduced through more efficient energy use in our homes. Renewable energy sources such as solar energy, wind, biomass fuels and geothermal energy have become more attractive alternatives and some such as solar do not pollute the atmosphere.

Every year we recycle more of the recyclable products but Australia is still one of the highest producers of waste per head of population in the world, creating around 28 million tonnes of garbage every year. Just over one third of this material is recovered for recycling. In 2001-02 the average Victorian household produced 580.4 kg of garbage per year.
(source: www.sustainability.vic.gov.au)

Consumers can play a larger role in minimising the amount of waste they produce by other actions, such as avoiding unnecessary consumption, reusing and recycling. Landfill should be seen as the last resort! The ranking is illustrated in the diagram below.
SECTION B
Buy ‘green’, save money

1. Reduce can mean looking at options such as borrowing, renting, bartering or buying second hand as well as making choices more carefully so that you have less rubbish to get rid of eg. avoiding goods with excessive packaging.

2. Reuse means to use a product more than once, rather than throwing it away after just one use eg. re-using glass jars.

3. Recycle means to take a waste item back to a manufacturing process so that it can be remade into either the same product or something different eg. plastic waste being made into park benches and fleecy clothing.

Recycling in Victoria
Each year household recycling in Victoria saves:
– 8,960 mega litres of water – the consumption of 3,370,000 people for one week

A cost/benefit analysis on kerbside recycling in 2001 for the National Packaging Covenant Council estimated the costs of Australian local government kerbside recycling (collections, sorting and delivery). For metropolitan areas these ranged from 70 cents - $1.15 per household per week, with higher costs in country areas. The report found there was a net environmental benefit of $424 million after allowing for all the costs involved.

Energy rating labels
Most of our consumer decisions involve some sort of cost/benefit analysis. Many environmental costs are not presently included in the final market price of goods and services so it can be hard for consumers to make informed decisions. However, the introduction of energy rating labels in recent years has given consumers much more information and a greater understanding of the environment costs involved when purchasing home appliances.

Well-informed ‘green’ consumers understand that saving energy is good for the planet as well as their wallet!
– Using energy efficiently is the best way to reduce energy bills and environmental impacts. Electrical appliances account for about 25 percent of household energy use.
– It is important to buy the right size: a large model will use more energy. The energy label will provide information on the number of kWh used per year.
– Appliances should not be used unnecessarily, for example, putting small loads in the dishwasher, washing machine and dryer.
– Maintaining appliances according to the manufacturer’s instructions means they will last longer – saving money and resources.
– Stand-by energy is drawn when some electrical equipment is not actually being used, such as when the television is turned off with the remote control, but not the switch on the set or at the wall. Stand-by energy can account for around 12 percent of energy costs in a home.
– Some solutions cost little or nothing at all eg. deciding to reduce shower time in the morning.

Consumers can often choose the wrong option, both for their wallet and the environment, because they have not had all the information they needed before making a purchase. The average annual energy bill for an Australian household is around $1,300 a year and it is possible to make substantial savings with some research.
SECTION B

Buy ‘green’, save money

The key to making an informed choice is understanding how our household water and energy is being consumed. For example, solar water heaters can reduce hot water bills by more than 60 percent each year saving $200 – 300. There are many ways of saving water, for example, by installing a AAA rating low flow shower rose, or using a shower timer. A dripping tap can waste 1,600 litres of water a month. The charts below show how household water and energy is consumed.

Can ‘environmentally friendly’ claims be trusted?

Some consumers are deterred from buying ‘environmentally friendly’ products as they believe they are more expensive; with electrical appliances the benefit comes later as the reduced energy use translates into cheaper energy bills. Another factor is misleading ‘green’ claims – what exactly do ‘environmentally friendly’, ‘earth friendly’ and other similar labels really mean?

An important job for consumer protection agencies is to ensure that manufacturers are not making misleading claims and exploiting consumers’ desire to help the environment.

In 2003, the Australian Competition and Consumer Commission (ACCC) took proceedings against Sanyo Airconditioning Australia for misleading claims in a brochure which contravened the Trade Practices Act 1974 stating that “environmentally-friendly HFC ‘R-407C’ added” and “for a new ozone era – keeping the world green”. R-407C is a powerful greenhouse gas. The Federal Court, Sydney found the company had engaged in false, misleading and deceptive conduct.

Environmental claims about a range of plastic kitchen, garbage and freezer bags were found to be misleading by the Federal Court, Melbourne in 2004. Lloyd Brooks Pty Ltd made Earthstrength bags and claimed they could be added to compost and would biodegrade in 28 days. The claims contravened the Trade Practices Act 1974. The ACCC chairman said ‘firms which make environmental or ‘green’ claims should ensure these claims are scientifically sound and appropriately substantiated as consumers are entitled to rely on and expect these claims to be truthful’. In 2003, Retravision Pty Ltd and Haier Australia Pty Ltd were found to have made misleading claims about the energy ratings of some washing machines. Following testing of the machines by the Australian Greenhouse Office, the matter was referred to the ACCC for investigation. Refunds were offered to customers.

Resources

Melbourne Water www.melbournewater.com.au > Education > Secondary
Visy Recycling www.visy.com.au
The Gould League www.gould.edu.au > School Programs
SECTION B
Buy ‘green’, save money

Introductory activity

a) Choose a typical school day and make a list of your activities. Then list one input needed for this activity and one output produced by this activity.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eg. shower</td>
<td>hot water</td>
<td>dirty water down the drain</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eg. eat lunch</td>
<td>sandwich</td>
<td>plastic food wrap</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eg. watch T.V.</td>
<td>electricity</td>
<td>heat from T.V.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) Compare your Ins and Outs table with one of your classmate’s, noting similarities and differences.

c) Reflect upon and summarise the impact that your consumption of goods and services has on the environment.

d) Consider two personal actions which you can take to minimise the impact of your consumption of goods and services on the environment.
Calculating utility costs

Exercise 1 - How much does it cost?
This activity requires household water, electricity, and gas bills. Find out how much water, gas, and electricity your house uses per day (be sure to record the correct unit eg. litres, watts), and how much each utility costs per day. Record the information in the table below or create a spreadsheet. Also record how many people are living in your home.

Number of people living in your home: __________

<table>
<thead>
<tr>
<th>Utility</th>
<th>Amount used per day</th>
<th>Cost per day</th>
<th>Average cost per person (cost divided by number in the household)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exercise 2 - Making comparisons
a) Compare the values in small groups, note the similarities and differences in your family’s use of utilities and other families, and suggest some reasons for the differences.

b) Make a note of any energy saving ideas offered by members of the group (in particular the families with the lowest average costs).
Where does it come from?

The main aim of these exercises is to have students identify the sources of utilities and assess the sustainability of their supply.

Exercise 1 - Web Worksheets
Working in groups of three, research the sources of water, gas, and electricity to the school, construct a worksheet and then give to another student to complete. Questions in each worksheet should focus on three areas:
- facts about the source
- facts about the future demand and availability of the source
- some facts comparing supply and demand in other parts of the world compared to your area.

Here is an extract from a possible web worksheet for water.

Visit the Melbourne Water website and answer the following questions.

www.melbournewater.com.au > Education > Melbourne’s clean water
1. Melbourne’s water storages are currently ____________ percent full.
2. The total capacity of Melbourne’s water supply is ____________ million litres
3. How many reservoirs make up Melbourne’s water supply? ____________
4. Which reservoir is the largest? ____________

Now visit http://education.melbournewater.com.au > Secondary > Educational Tours > What’s New > Eastern Treatment Plant Explorer > Teacher Notes & Resources > Resource List > Number 10 and answer the following questions.

1. Melbourne’s population is expected to grow to ____________ million people by 2050.
2. Under scenario 2 – ‘Using what we have’, each person will have to reduce their water use by ____________ percent to maintain the same water use overall.

Did you know?

Most of the greenhouse gas generated by a washing machine is for heating water – cold washing generates only around a tenth of a kilogram of greenhouse gas per wash.

ABC Planet Slayer factoid
Reducing the waste

Exercise 1 - Audit of household waste
The night before the garbage is collected, weigh all the garbage, including what is in the recycle and green waste bins.

1. Cover the floor with newspapers and sort the garbage into the following categories:
   - compostable
   - recyclable
   - reusable
   - landfill.

2. Weigh each category and calculate it as a percentage of the total amount of garbage.

3. Record this information in percentages using the chart below.

<table>
<thead>
<tr>
<th>Type of waste</th>
<th>Percentage of total waste</th>
<th>Percentage in wrong category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compostable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recyclable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reusable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landfill</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Calculate the percentage of waste that was in the wrong category.

5. Repackage the waste correctly.

In class, compare your results with the rest of the class. Discuss and note the practices of those households with low landfill percentages.

Write a list of recommendations for your own family to ensure best practice waste disposal methods are used.

Exercise 2 - Reducing landfill costs
Read the letter from the Mayor of Casey and summarise in your own words the reasons given for the introduction of the Green Waste Service.
Reducing the waste

Letter from the City of Casey’s mayor

There has been a lot written recently about the new Green Waste Service to be introduced by Council in July. Some of the debate has been based on a lack of understanding of the issues involved, and I need to clarify some of the issues.

Capacity of Melbourne’s Landfills

As a community we create a huge amount of rubbish. As a result space to tip rubbish in our landfills is reducing quickly. That is why all Councils are trying to reduce the total amount of rubbish going into landfill. This can be done in a combination of ways, including diverting recyclable material.

Investigation has shown that 30 percent of the rubbish collected from Casey households and deposited in our landfill is Green Waste. This can be removed from the waste stream by the Green Waste Service, and recycled. The result is a significant reduction in waste going into landfill.

Landfill Costs

Our current landfill in Cranbourne will be full in 12 to 18 months. We own this landfill. Our current disposal costs are less than charged by private landfills. The cost charged by private landfills will increase steadily in future years as the availability of space reduces (the simple principle of demand and supply). The City of Casey’s cost to send waste to landfill will be increasing from $28/tonne to $42/tonne when our current tip is filled early next year. Reducing the amount of rubbish going to landfill will reduce the exposure of Casey residents to these increasing costs.

The Environment

The green waste that goes to landfill creates greenhouse gases as it breaks down over the years. These gases escape into the atmosphere, compounding an already significant problem.

Governments at all levels are trying to reduce the amount of greenhouse gases created. Green waste is a valuable resource that can be recycled into mulch and compost. The recovery of the green waste will make the City of Casey a more sustainable community into the future.

Funding the service

The new Green Waste Service will cost $2.5 million to deliver, however this is cost neutral because Council will not receive any extra income by introducing it. As with over 100 Council services, the Green Waste Service will be paid through the General Rates. Services such as libraries, Maternal and Child Health, road maintenance, and maintenance of recreation facilities and parks are funded through rates.

This is the same as the current Kerbside Recycling Service (paper, cardboard, cans and plastics), which is also paid through General Rates.

Cr Rob Wilson Mayor

Source http://www.casey.vic.gov.au
Exercise 3 - You are the new Mayor!

a) Working in small groups, imagine you are the Mayor for your Local Council/Shire and local councillors. You know waste is a problem as you are running out of room to put it. Your options include:

- paying to have the rubbish sent elsewhere
- digging deeper landfills
- putting in more kerbside recycling
- working with the packaging people to reduce packaging on popular foods and items
- educating the people living in the area to encourage them to recycle.

Write a plan for your council explaining what measures you want to put in place. Remember the 3 Rs!

Use de Bono’s Six Hats to get you started.

Red Hat – what are our feelings about the options?
White Hat – where can we get more information from?
Green Hat – how can we generate some creative ideas?
Yellow Hat – what’s good about our ideas?
Black Hat – what’s bad about our ideas?
Blue Hat – what other types of thinking could we use?

b) Create a web page, leaflet or information kit, advising rate payers of your proposals, or write an article for your local newspaper. Ask a classmate to review your work, then respond to any concerns.
Many of our every day appliances now have energy, environmental and water ratings on them, to help consumers make informed decisions. Saving energy can be good for the wallet as well as the planet. Energy costs have been described as the ‘second price tag’ and they are often forgotten!

Exercise 1 - Little decisions make big differences
Look at the product labels in the table below. You may recognise some from your home. Visit the websites below and then answer the following questions.

<table>
<thead>
<tr>
<th>What do these labels mean/represent?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which appliances have them?</td>
</tr>
<tr>
<td>What is the difference between a 1 star and 5 (or 6) star rating?</td>
</tr>
<tr>
<td>How does buying a 5 (or 6) star appliance benefit you? Select one energy efficient label and explain the difference between a 1 star and a 5 (or 6) star rating.</td>
</tr>
<tr>
<td>How does buying a 5 (or 6) star appliance benefit you as a consumer?</td>
</tr>
<tr>
<td>How does buying a 5 (or 6) star appliance benefit the environment?</td>
</tr>
</tbody>
</table>

- www.sustainable-energy.vic.gov.au
- www.energyrating.gov.au
- www.wsaa.asn.au
- www.buildingcommission.com.au
- www.5starhouse.vic.gov.au
- www.greenpower.com.au
Making sense of energy rating labels

Exercise 2 - Which machine is best?
Visit the energy rating website www.energyrating.gov.au to compare the cost and energy efficiency of two washing machines.

Assume you wish to buy a new washing machine with a 5-6 kg capacity. Select one machine with a 1 star rating and one with the highest 4 1/2 star rating. Visit the manufacturers’ websites, or the sites of local retail stores, and find the lowest selling price of both machines. Print out photos of the two models if available.

Calculate the energy costs using the cost calculator at the energy rating website. Assume you plan to use the machine five times a week for ten years using the warm wash cycle. Complete the information below.

<table>
<thead>
<tr>
<th>1 ★ model</th>
<th>Purchase price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 1/2 ★ model</td>
<td>Purchase price</td>
</tr>
</tbody>
</table>

Electricity cost 15 c/k Wh
Hot water electricity cost 4 c/k Wh
Warm washes per week

1 ★ model
Energy costs for 10 years
4 1/2 ★ model
Energy costs for 10 years

Difference in energy costs between the two models

Is the washing machine with the lowest purchase price the best buy?
Use your calculations to explain your answer.

Why do top loader washing machines have lower star ratings than front loaders?

What other factors might a consumer take into account when purchasing a washing machine apart from purchase price and energy costs?

Briefly summarise the benefits of the model you have selected and create a classroom display with photographs of the selected machines.
Making sense of energy rating labels

Exercise 3 - Comparing other appliances
Compare two models of another appliance at the website, for example, fridge-freezers.

Calculate the purchase price (do an internet search and note the cheaper and the most expensive prices quoted for the two models in your shopping area). Select the lowest price for this exercise.

Lowest price $ __________________ Supplier __________________

Highest price $ __________________ Supplier __________________

Annual operating cost (assume a life span of 15 years for a fridge) __________________

The saving over that time if the most efficient of the two models is chosen (show your calculations) __________________

Make a recommendation based on your research.

____________________________

____________________________

Exercise 4 - Testing appliances in the classroom
Working in groups, test three different brands of the following appliances:
– toasters – kettles
– sandwich maker – food processor/blender
(or similar small appliances).

Moving around each testing area, fill in the observation chart (see sample below).

The wattage information is usually printed on the appliance or the packaging and this tells the buyer how much electricity the product consumes per hour. For example, a 100 watt incandescent light globe would use 0.1 kW per hour. The electricity tariff can vary with peak and offpeak rates, but for this activity use the average tariff of 15 cents/kWh

At the conclusion of the testing, determine which brand is the most efficient for each product and then compare results with the other groups.

Brand of toaster | Time to toast | Wattage | Electricity tariff | Operating cost |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>15 cents/kWh</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15 cents/kWh</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15 cents/kWh</td>
<td></td>
</tr>
</tbody>
</table>

At home
Students can test appliances at home and compare the results to those observed in class and, where applicable, make recommendations to parents about the purchase of new appliances.
Making sense of energy efficient labels

Exercise 5 - Seeing stars at home
Complete this worksheet by exploring your home (especially the kitchen, laundry and bathroom) for energy and water saving labels.

Draw or photograph each label you find and note the appliance it was attached to.

Ask your parents if the energy rating was a major factor in their decision to purchase the appliance.

Once the survey has been completed, give your home an overall energy and water saving rating from 1 – 5 stars and clearly explain your selection.

<table>
<thead>
<tr>
<th>Appliance:</th>
<th>Reasons for purchase:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Appliance:</th>
<th>Reasons for purchase:</th>
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<table>
<thead>
<tr>
<th>Appliance:</th>
<th>Reasons for purchase:</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
</tbody>
</table>

Did you know?
Using electricity to heat 15 litres of hot water generates a kilogram of greenhouse gas. You can heat nearly 3 times that much water for the same amount of greenhouse gas using a gas hot water system.

*ABC Planet Slayer factoid*
How sustainable is my home?

From 1 July 2004 every new home and apartment in Victoria has needed to have a 5 star level of energy efficiency. There are different ways of achieving the rating. Making choices can be very difficult, because there are often so many options to choose from.

A major decision is choosing heating for a home; heating accounts for over half the average household’s energy costs. An energy smart heating system can be good for the wallet and the environment!

When choosing a form of heating, the first thing to consider is the two main forms of heating – convection and radiant. There is a significant difference between the two. Convection heats the air inside a room and circulates it around the home and radiant works by heating an electric element (or ceramic plates in the case of gas radiant heaters) until they radiate large amounts of heat into the room. There are heaters that can perform both functions. If a house does not have good insulation then convection heating would be a waste of money because the hot air would escape.

One of most common forms of heating is electric – an electric fan heater might only cost $20 to buy but the running costs are very expensive: a 2 400 watt fan or radiant heater could cost $30 a week to run and heat just one room. It is important to take into account running costs – known as ‘the second price tag’ - and explore all possible options before making an expensive purchase eg. solar, radiant gas heaters, oil filled heaters.

Exercise 1 - Does my home have a five star rating?
Working in small groups design a suitable survey (each group can work on a different part of a house eg. walls/floor coverings, kitchen appliances, heating and cooling). Some examples of possible questions are below.

Heating/cooling
If you have an air-conditioner, what size is it?

<table>
<thead>
<tr>
<th>Size</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>2600 W</td>
<td></td>
</tr>
<tr>
<td>3500 W</td>
<td></td>
</tr>
<tr>
<td>5100 W</td>
<td></td>
</tr>
<tr>
<td>6190 W</td>
<td></td>
</tr>
</tbody>
</table>

Kitchen appliances
If you have a dishwasher, what size is it?

<table>
<thead>
<tr>
<th>Size</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8 place settings</td>
<td></td>
</tr>
<tr>
<td>12 place settings</td>
<td></td>
</tr>
<tr>
<td>14 place settings</td>
<td></td>
</tr>
</tbody>
</table>

CONTINUED
Water heater
Around 30 percent of household energy is used to heat water. What type of water heater do you have?

<table>
<thead>
<tr>
<th>Electric storage</th>
<th>Solar – electric boost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas - storage</td>
<td>Solar – natural gas boost</td>
</tr>
<tr>
<td>Gas - instantaneous</td>
<td>Solar – solid fuel boost</td>
</tr>
</tbody>
</table>

How much hot water does each person in your family use in a day? ________________ litres/day

Complete the survey at home and prepare a report for the class (include photos of energy saving devices such as solar panels) or create a model of your home.

My home’s star rating is (circle your choice)

Explanation: __________________________

Revision Activity
Match the following words/phrases with the correct definition:

1. Reuse 1. Any natural resource of energy that can replenish itself naturally over time
2. Recycling 2. A raw material or item that can be used
3. Unrecyclable 3. The outcomes of a production process
4. Renewable energy 4. To utilise more than once
5. Resource 5. A material that can not be reconditioned or used again
6. Outputs 6. To recondition and adapt to a new use or product
7. Energy rating labels 7. A distinctive name or trademark used to identify a specific aspect of a product or manufacturer
8. Branding 8. Information that shows the energy efficiency of electrical appliances
1. **Spot the ‘green’ shopper survey!**
   Design a survey to find out the extent to which consumers in your area are aware of the issues covered in this unit. Some issues to be covered include:
   - awareness of their local recycling programs
   - specific attitudes and behaviours regarding the 3 Rs.
   - understanding of energy rating labels and use of energy saving devices.

   Within each group, design five survey questions so that each answer can be:

<table>
<thead>
<tr>
<th>Yes</th>
<th>OR</th>
<th>Agree</th>
<th>Disagree</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
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<td>☐</td>
<td>☐</td>
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</tbody>
</table>

   Groups share their questions so a 25 question survey is produced.
   Each student must survey four people. Survey results are shared and the data collated.
   Individually, write a paragraph commenting on the results. Prepare a multimedia presentation of your findings.

2. **Create an environmentally friendly house**
   Write a report for consumers explaining the benefits of 5 star homes. Pick one of the following activities and write a guide for someone who is planning to build a house, on the most environmentally sensitive way to carry out that activity.
   - Putting in a hot water system
   - Choosing the heating/cooling system
   - Buying new washing appliances; dishwasher, washing machine and dryer
   - Buying new kitchen appliances; fridge, cooker, microwave.
   - Buying and installing lighting appliances in the home.

3. **Is my mobile killing gorillas? The secret life of your favourite products.**
   As consumers, we can reduce waste and greenhouse gas emissions by incorporating environmental considerations into our daily purchasing decisions and being more aware of the environmental impact of our consumption habits. Every time you buy a recycled product you take something out of the waste stream and support an environmentally friendly industry. But it is not always easy to identify which products are environmentally sound and so a bit of detective work may be needed.

   The various components such as antennae, circuit board, speaker and batteries might have been made in China, Taiwan, South Korea or Indonesia, using copper from Papua New Guinea and gold from Australia. Tantalum, which is refined from coltan, is another metal found in mobile phones. Farmers have been evicted from coltan rich land in the Democratic Republic of the Congo and elephants and gorillas killed by miners for food. The toxic materials found in phones and batteries including lead, mercury and cadmium often end up in landfill.
Buy ‘green’, save money

Working in small groups, prepare a multimedia presentation or poster on the life cycle of a mobile phone or another popular product such as an iPod. Use the life cycle flow chart to help plan your presentation.

Product  

---

4. **How to be a ‘green’ shopper**

Read the following advice on how to be a ‘green’ shopper and then prepare a visually appealing poster, leaflet or web page for students summarising what you consider to be the key points.

*Which is the best option for the environment?*

Compare price, quality and environmental performance of different brands. Sometimes, environmentally friendly products may cost more, but energy savings will leave the consumer better off.

*Is it made from recyclable materials?*

Choose products made from paper, cardboard, aluminium, steel and recycled plastics to create demand for recyclable materials. Know the difference between recycled and recyclable.

Look for the following information:

- percentage recycled (paper and cardboard)
- unbleached (paper and cardboard)
- made from recycled plastic
- made from sustainable managed timber
- recycled content (metals and plastics).

*Do I need this packaging?*

Choose refillable or reusable packs. Avoid over-packaged or throw away goods such as plastic cutlery with a takeaway meal and say “No” to unnecessary plastic bags. Australians use approximately 6 million plastic bags each year – enough to stretch around the world 37 times!
Buy ‘green’, save money

Will it end up in landfill?
Reduce waste going to landfill by choosing reusable and recyclable products. Avoid disposable products that will be used once only. Look for products that give the consumer recycling information eg. numbered recycling symbols on different plastics. Look at other disposal options – giving to charity, a friend, neighbour, selling at a local market.

Where was it made?
Transportation contributes to air pollution and greenhouse gas emissions.

What does the label really mean?
Look out for vague labels such as:

5. A model home
Create a model home and include as many energy saving devices as possible. Create a class display for the school’s Open Day or Parent/Teacher night.

6. Create a class garden
Create a special garden space for the class to grow flowers or seedlings.

7. Insulation experiment
Make model houses and cover with a variety of insulating materials, measure the temperature changes and evaluate the effectiveness of different materials.

8. Create a solar product
Using the resources listed in this unit, explore the growing range of solar powered products and create your own, for example, a solar powered barbeque.

9. Make paper pots
As a class, make some recycled paper from old newspapers and other waste paper. Mould the paper into plant pots and create an indoor garden.

10. Testing household cleaning products
Consumers are increasingly demanding environmentally-friendly, less toxic household cleaners, and also trying simple home made solutions which are cheap and effective. Conduct experiments comparing some popular cleaners with homemade ones eg. baking soda to clean tiles and workbenches, vinegar and water to clean glass. First, develop some criteria you could use to evaluate the different products.
Aims and overview
In this unit students will consider the total costs involved in the production, transportation, packaging, selling and consumption of different foods (health, environmental, economic, financial and social).

Key concepts
Sustainable agriculture, ‘green revolution’, genetically modified foods, the life cycle of foods.

Learning outcomes
At the end of the unit students should be able to:
– calculate the total energy input in the production of different foods
– assess the economic and environmental consequences of personal food choices
– design and carry out a survey and record the results in a meaningful way
– explain how consumers can make informed choices about the foods they purchase, prepare and eat.

Background information
The food and grocery products industry is Australia’s largest manufacturing sector, with an annual turnover in excess of $50 billion. But what is the true cost of food? It is not the amount of money handed over in the supermarket or grocery store but the total cost, including the environmental, social, and societal costs. Food, and its production costs (food production and processing, packaging, storage and transport) is the biggest contributor to Victoria’s ecological footprint – at 37 per cent.

Consumers influence how and where their food is produced. For example, choosing to buy in season fruit from a local farmers’ market rather than non-seasonal produce that originated on the other side of the planet. We often buy food from distant countries without thinking of the significant environmental costs involved. Buying local produce saves energy from being expended on freezing, refrigerating and transporting food thousands of kilometres. When the food travels by air the costs increase dramatically, for instance, it takes 47 times as much energy to carry a tonne of food one km by air than it does by boat.

Another choice that consumers make is between conventionally produced fruits, vegetables, cereals and organic produce. Conventional methods generally involve using synthetic pesticides and fertilizers: these increase the yields and reduce prices for customers. However, chemicals enter the waterways and cause pollution – this is the hidden cost. Other hidden costs can include soil degradation, environmental problems and the use of large amounts of energy. Organic farming does not use synthetic pesticides or fertilizers, farmers use more natural techniques to control pests and protect soil fertility.

Of growing concern is the issue of genetically modified (GM) foods. World Consumer Rights Day 2005, organised by Consumers International, focused on GM foods. Demands were made for compulsory labelling of all GM foods, and for independent safety testing.

See the Consumers International fact sheet ‘Why consumers should take action’ at the Consumers International website: www.consumersinternational.org
Recent surveys show that up to 90 percent of Australian consumers want labels on GM foods. In Australia only foods with GM proteins detectable in testing must be labelled. This exempts foods with ingredients made from animals raised on GM feed and food with highly refined GM ingredients.

In recent years, many consumers have shown a growing awareness of the links between their food choices and environmental considerations by demanding:

- good value and guaranteed quality
- safer and more traceable food (eg. they want to know where it comes from)
- better animal welfare
- reduced packaging and waste
- more informative labelling (eg. wanting to know if the food has been genetically modified)
- ethically sourced food eg. free range eggs
- more local produce, eg. the growing popularity of local farmers’ markets.

Consumers are asking more questions such as: ‘How do I recognise truly sustainable products?’ ‘Are there more sustainable alternatives to traditional foods?’ ‘Will they cost more and if so, why?’

Agencies such as Consumer Affairs Victoria can help consumers gain the knowledge and skills to find the answers to those questions.

There is no doubt that the food we eat has a direct impact on our health and overall wellbeing. So it is important to be aware of the link between the food we choose and the environment from which it came.

Resources
Food Victoria www.food.vic.gov.au
Australia’s Food and Grocery Council www.afgc.org.au > Consumer Issues
Nutrition Australia www.nutritionaustralia.org
Federal Department of Agriculture Fisheries and Forestry www.affa.gov.au > Publications > Food
Consumers International www.consumersinternational.org
SECTION C
The real cost of food

Introductory Activity

a) Why do people buy the food they buy?
Consumers buy particular food products for a variety of reasons. Make a list of some of the factors that influence food choices (think of the foods in your fridge/freezer).

   e.g. buy organic foods for health reasons

b) What is my orange juice really made of?
Look at a bottle of imported orange juice and list all the resources that have been used to produce it. Some examples are given below.

<table>
<thead>
<tr>
<th>Natural resources</th>
<th>Human resources</th>
<th>Manufactured resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Water</td>
<td>- Orange pickers</td>
<td>- Fruit peeling and squeezing machines</td>
</tr>
<tr>
<td>- Fertile soil</td>
<td>- Farmers</td>
<td>- Ships</td>
</tr>
<tr>
<td>- Wood (for crates)</td>
<td>- Ship's crew</td>
<td>- Processing plants</td>
</tr>
<tr>
<td></td>
<td>- Packaging designers</td>
<td>- Insecticide spray</td>
</tr>
</tbody>
</table>

c) Comparing the cost
Compare the cost to the environment of buying a bottle of orange juice to squeezing your own juice from Victorian oranges. Firstly, using a pencil or highlighter, cross out the items in the table above that would no longer be needed.

d) Squeezing the juice
Summarise some of the advantages and disadvantages of squeezing your own juice compared to buying bottled juice (locally made and imported).

Did you know?
The most efficient fridges on the market today generate only about half as much greenhouse gas as 15 year old fridges of the same size.

ABC Planet Slayer factoid
My food footprint

Every one of us requires a finite area of Earth’s surface to support our existence. This is our Ecological Footprint. We can also calculate footprints for specific parts of our lives, such as a food footprint. This goes for everything that you consume. But there are other issues to consider in determining your food footprint:

- energy used to grow, package, transport and keep the food fresh
- materials used to protect the food
- water used to grow and process the food
- other food used in the final product.

Exercise 1 - Where is my food from?
For this activity you will need a box containing a variety of fruit, vegetables and processed foods and a world map. The items will need to show the country of origin.

a) To complete the table below, you will need to:
- identify which country each item has come from
- mark the origin on the world map, and
- estimate the distance that item has travelled to be in the classroom today (using the scale provided on the map).

Once you have done this for each item, calculate the total number of kilometres the box of food has travelled.

<table>
<thead>
<tr>
<th>Food</th>
<th>Country</th>
<th>Distance travelled</th>
<th>Cumulative total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

b) If the world circumference is 40,075.16 kilometres, how many times has the box of food travelled around the planet to be in your classroom?

_______ times.

Exercise 2 - Food packaging
Packaging is essential for processed food and drink as it preserves and protects it during transportation, and helps prevent spoilage and contamination during production, distribution and sales. It is also a communication tool displaying information (some of which is a legal requirement) on ingredients, nutrition, and serving and storage instructions.

Imagine you’re the Managing Director of Crushed + Pulped International. You have received a number of complaints and comments about the packaging of your orange juice.
You are launching a new, fresher orange juice and decide this is an opportunity to redesign the packaging. The comments include:

- ‘The 150ml plastic orange juice is too small and doesn’t quench my thirst.’
- ‘The type of plastic used cannot be recycled at our local recycling facility.’
- ‘We’d like to reuse the containers but aren’t sure what we can use them for.’
- ‘The orange juice came in a plastic bottle, with a plastic label, and with a plastic covering.’
- ‘The 150ml bottle was packaged in a set of six, held together with a plastic holder.
  Why can’t you provide bulk purchases?’
- ‘Squashed Oranges have a refund incentive on their bottles, why don’t you?’

Design and make a model of the new packaging design for your orange juice product, and suggest a suitable brand name. Some questions to consider are:

- Can the packaging be reduced and, if so, how?
- What packaging material should be used?
- How can the packaging be reused/recycled?
- How can the packaging be recycled?
- What size should the product become?

Use de Bono’s Six Thinking Hats to get you started.
Red Hat – what are our feelings about these issues?
White Hat – where are we going to get our information from?
Green Hat – how can we generate some creative ideas?
Yellow Hat – what’s good about our ideas?
Black Hat – are there any flaws in our ideas? What could go wrong?
Blue Hat – how do we organise our thinking eg. in what order should we use the Hats?
What other techniques could we use?

Also try the de Bono Random Word technique to stimulate some innovative packaging ideas
e.g. tortoise + packaging = ___________________

Exercise 3 - Recognising a good footprint
You are the Chief Executive Officer of the Ecological Footprint Society. You are so impressed with the improvements made to Crushed + Pulped International’s new product range, you decide that your organisation needs to develop a logo for products that have reached the lowest food footprint level and are a sustainable food source.

Design a food footprint logo that is easily recognisable, eye catching and indicates a sustainable food source. In conjunction with this logo, you will need to develop a set of criteria that manufacturers need to satisfy in order to be able to use your food footprint logo.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>eg. local produce</td>
<td>Has not been transported from overseas</td>
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</tbody>
</table>
Products have lives too

Everything we eat comes from the natural environment, even the foods that are processed and canned or frozen in plastic. We rely on the environment to provide the food and to support the systems and processes that gets food from its production, to the supermarket and then to our homes. Food products have a life cycle made up of a series of stages, for example, wheat seeds are planted, the cereal grows, and is then harvested, transported, processed into flour, packaged, sold to a bakery, and then consumed and any waste disposed of. Some of the life cycles can have surprising costs.

Exercise 1 - The true cost of burgers
Fill in the missing words and convert all measurements to metric.

According to the I Buy Different website [www.ibuydifferent.org](http://www.ibuydifferent.org),

It takes 600 gallons _____ litres of water to make every quarter-pound burger. This includes drinking water and water needed to produce the grain.

A cow eats over 1.3 pounds _____ kgs of grain to make that one burger.

1.2 pounds _____ kgs of soil are washed away by erosion.

One cow can produce 2 000 quarter pounders (over five years) but it eats 16 pounds _____ kgs of grain a day.

Lots of land is needed to grow grain, _______ have disappeared to provide more grazing land for cattle as demand has grown and soil erosion increased. Soil _______ occurs because cows _______ the grass and _______ the ground bare.

The other costs of growing grain include _______ and _______ to plant and harvest the grain and _______ to keep it growing.

Reproduced with kind permission of The Center for a New American Dream.

Exercise 2 - The life cycle of my lunch
Every food item has a life cycle, with stages that have environmental and social impacts, as it uses resources (natural or human) and generates waste. Choose a popular food item, research its life cycle and then present the information in a life cycle poster, PowerPoint presentation or web page. At each stage of the cycle identify one resource that is used and one waste that is generated. Alternatively you could create a model of your local area. Some possible choices are:

– a chocolate bar
– bottle of cola
– peanut butter.

Visit the following website to get some ideas: Oklahoma Association for Environmental Education [www.okaee.org/uls](http://www.okaee.org/uls) > scroll down to see the secret life of food section

<table>
<thead>
<tr>
<th>Life cycle stage</th>
<th>Resource that is used</th>
<th>Waste that is generated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
Water – tap or bottled?

Water from the tap costs 75 cents for 1 000 litres, while bottled spring water is sold in the shop at $2.50 per 1 000 litres ($1.50 for a 600 millilitre bottle).

If you drank two litres of tap water instead of two litres of bottled spring water, how much would you, your class, your school, Melbourne, Australia save in a year? Assume for this exercise the prices are those listed above, that all bottled water comes in 1 litre bottles and comes from New Zealand.

<table>
<thead>
<tr>
<th>Savings</th>
<th>You</th>
<th>Your class</th>
<th>Your school</th>
<th>Melbourne (3.2 million)</th>
<th>Australia (20 million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In money</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In the number of 1 litre plastic bottles required</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In the distance the water has travelled</td>
<td></td>
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</tr>
</tbody>
</table>

The difference between tap and bottled water is $2,499.25 per thousand litres ($2.49 per litre). Where do the other costs of its production come from? Identify the stages of getting the spring water from the source to the shop and work out where this cost is generated. One of the first stages is to collect the water from the source. It will then need to be transported to a filtering station.

Visit the manufacturer’s website listed below. They make machines to process mineral water. The machines will give you an idea about the process involved.


See also the following site for information on the different types of bottled water.

- [www.bottledwaterweb.com](http://www.bottledwaterweb.com)

**Did you know?**

Showering with electrically heated water generates about half a kilogram of greenhouse gas every minute.

*ABC Planet Slayer factoid*
Exploring new options

Consumers often get into the habit of shopping a certain way, for instance, once a week at the local supermarket. This is often based on the assumption that it is the quickest and cheapest option.

Exercise 1 - Why do we shop the way we do?
List the advantages and disadvantages of shopping once a week at a local supermarket.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Exercise 2 - Mapping out the options
Using a map of your local area, mark on it all the local food outlets you are aware of (use the categories in the table on the next page as your guide and a different colour for each category).

Compare your responses with the rest of the class and then complete the table and answer the following questions.

– How many food outlets are there in your local community?
– How many of these outlets have you visited?
– How many of these outlets have you never noticed before?
– What are the physical differences between the ones you have visited/noticed and the ones you haven’t? Size, signage, access?

Comment on any patterns you see in the location of different food outlets eg. fast food outlets located near major intersections.
# Exploring new options

**My community**

<table>
<thead>
<tr>
<th>Eating places</th>
<th>Number visited</th>
<th>Number never noticed</th>
<th>Shops</th>
<th>Number visited</th>
<th>Number never noticed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast food outlets</td>
<td></td>
<td></td>
<td>Convenience stores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cafes</td>
<td></td>
<td></td>
<td>Supermarkets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restaurants</td>
<td></td>
<td></td>
<td>Independent grocers</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Butcher</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Organic grocery shops</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bakery</td>
<td></td>
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</tr>
</tbody>
</table>
The real cost of food

1. **Sustainable Day**
Organise a sustainable food day. Make a commitment to bring the most sustainable lunch possible. Rate everyone's lunch based on the energy inputs and waste outputs across the whole life cycle of their lunch. Start by designing a rating system that every class member can agree on.

2. **Bottled water – is it worth it?**
As a continuation of Worksheet C3, design a survey to find out how popular bottled water is with local consumers (including students and teachers). First, research the cost of local and imported bottled water by visiting a supermarket website. Also explore the cost of other options including water filters.

   Design your questions to find out how many people:
   - buy bottled water on a regular basis
   - own some sort of water filter
   - prefer to drink ordinary tap water, and
   - the reasons why consumers have made these choices.

   Make contact with students in other states or overseas and compare the quality of water and the extent to which they rely on bottled or tap water for their daily needs. Compare the cost of water to what Victorian consumers pay.

3. **What's for lunch?**
   Compare the life cycle of a low-packaged school lunch to a highly packaged one. Consider the complete life cycle of each one, including the amount of packaging.

   **Low packaged lunch**
   - Homemade muffin
   - Cheese sandwich
   - Apple
   - Freshly squeezed orange juice in a reusable container.

   **High packaged lunch**
   - Supermarket muffin
   - Sliced cheese sandwich
   - Diced apple (in sealed plastic tub)
   - Fruit box.

   Show the journey of one of the food items above in a flowchart and identify the costs to the environment. First, complete the example given below of the environmental costs of bread for the sandwich.

   ![Flowchart showing the journey of a sandwich](image)

4. **Create a sustainable meal**
   Plan and cook a family meal using only local ingredients eg. food grown within a 30 or 50km radius. Consult local maps first and then decide what would be a feasible radius.
The real cost of food

5. **Let’s go shopping!**
   Ask your parents to save their weekly shopping list from the supermarket. Next week, with your parents, try to buy as many grocery items as you can on the list from an independent local grocer or a range of local shops. Then answer the following questions.
   
   – Was it more or less expensive?
   – Could you buy everything on the list?

   In an Excel spreadsheet, set up a table as follows:

<table>
<thead>
<tr>
<th>Shopping item</th>
<th>Supermarket cost</th>
<th>Local grocer cost</th>
<th>Difference</th>
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   List supermarket items and prices in the first two columns, then add the local grocer costs in the third column and calculate the difference. Comment on differences in cost, convenience, choice and any other relevant factors.
The real cost of food

6. Mix and match!
Match each of the following suggestions on how to eat more sustainably in column 1 with the correct impact on the environment or health in column 2 and then provide a specific example in column 3. The first example has been completed for you.

<table>
<thead>
<tr>
<th>Sustainable food consumption statement</th>
<th>Impact on the environment and/or health</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Choose foods that have less packaging or have packaging that can be reused or recycled</td>
<td>1. Minimises the waste produced and amount of rubbish that goes to landfill</td>
<td>1. Buying vegetables at the greengrocers/supermarket that are not in pre-weighed vacuum sealed plastic bags</td>
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<tr>
<td>2. Choose organic products</td>
<td>2. Less storage and transport needed.</td>
<td>2.</td>
</tr>
<tr>
<td>3. Choose fruits and vegetables of the season</td>
<td>3. No pesticides or fertilisers used so healthier soil and food</td>
<td>3.</td>
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<tr>
<td>4. Choose products produced as locally as possible</td>
<td>4. For personal health and nutrition</td>
<td>4.</td>
</tr>
<tr>
<td>5. Eat more vegetables, fruits and cereals</td>
<td>5. Less transport needed and the food is fresher</td>
<td>5.</td>
</tr>
</tbody>
</table>

Did you know?

Leaving a fluorescent light on when you go out doesn’t save energy – switch off if you’re leaving for more than a few minutes.

*ABC Planet Slayer factoid*
SECTION D
Smarter transport options

Aims and overviews
In this unit students will evaluate the sustainability of different modes of transport in their community by comparing costs, efficiency, and atmospheric emissions. They will also evaluate the relationship between personal lifestyle and transport choices.

Key concepts
Fossil fuel dependency, greenhouse gas emissions, air pollution, sustainable transport.

Learning outcomes
At the end of the unit students should be able to:
– assess the costs, energy use and energy efficiency of different modes of transport
– assess the contribution of different modes of transport to air pollution and greenhouse gas emissions
– evaluate the relationship between life style choices, transport, and the impact on the environment
– retrieve and accurately interpret information from maps and transport timetables, and plan journeys.

Background information
Few purchases by consumers have a bigger impact on the environment than the choice of a car and there are many sustainability issues linked to transport such as: air pollution, energy consumption, greenhouse emissions, and land use for roads and parking. Almost half of Melbourne’s daily air pollution, for example, is caused by vehicle emissions. Poor quality or polluted air can affect people’s physical health and quality of life. EPA air quality studies have shown that commuters are exposed to higher levels of pollution when travelling in cars within a city, than those travelling on public transport, cycling or walking. These issues are of growing concern given the increasing popularity of larger cars such as 4 wheel drives. Alternative methods of travel have many benefits – they can be less stressful, with fewer instances of traffic jams, accidents and parking predicaments.

The World Business Council for Sustainable Development (WBCSD) has defined sustainable transportation as ‘the ability to meet the needs of society to move freely, gain access, communicate, trade, and establish relationships without sacrificing other essential human or ecological values today or in the future.’

In a report developed for it by 12 global automotive and energy companies, entitled Mobility 2030: Meeting the Challenges to Sustainability, and published in July 2004, the WBCSD stated that, if current mobility trends were to continue, social, economic and environmental costs worldwide would be unacceptably high. However, these costs can be avoided if societies as a whole focus on the achievement of seven goals.

1. Ensuring conventional emissions from transport are not a significant health concern anywhere.
2. Limiting greenhouse gas emissions from transport to sustainable levels.
3. Significantly reducing traffic-related deaths and serious injuries worldwide.
4. Reducing transport-related noise.
5. Mitigating traffic congestion.
6. Narrowing the divide in mobility opportunities that exists between and within different societies and regions of the world.
7. Preserving and improving existing mobility opportunities.

Car manufacturers are developing engines that are more efficient and less polluting and also investigating new types of cars such as hydrogen and electrical vehicles. Hybrid cars, with additional electric motors, improve fuel efficiency and reduce exhaust emissions. These cars are becoming increasingly popular with Australian consumers.
SECTION D
Smarter transport options

Resources
MetLink www.metlinkmelbourne.com.au
V Line (regional rail network) www.vline.com.au
Smogbusters Way to School www.waytoschoolkit.infoxchange.net.au/
Victorian Department of Infrastructure www.doi.vic.gov.au > Know your area
Sustainable Transport
www.greenhouse.gov.au > fuel label
Greenfleet www.greenfleet.com.au
The calculator shows how much greenhouse gas we have created in a year (house, car and plane travel) and how many trees are needed to offset the damage done.
Bicycle Victoria www.bv.com.au
Australian Government Department of Transport and Regional Services
How Stuff Works www.howstuffworks.com/hybrid-cars.htm
TravelSmart www.travelsmart.vic.gov.au > Schools

[Image of people walking and cycling]
**Smarter transport options**

**Introductory Activity**
This exercise challenges the students to consider alternative ways of travelling to school. Part of thinking and acting sustainably is to consider alternatives and see if our original approach is still the most suitable one: circumstances may have changed or new opportunities arisen.

1. Answer the following questions as part of a class travel survey.

   **Class Travel Survey**
   
   Name __________________________ Date __________________________

   1. How do you normally get to school?

   2. If you could not get to school this way, how else might you get to school?

   3. Would your route change at all? If so explain how.

   4. How much longer or shorter would the journey be?

   5. If there are possible alternatives, what would some of the benefits be?

2. Plot the route taken to and from school for all class members using different colours to identify each transport mode.

3. Make a note of how many students travel by:
   - car
   - school bus
   - bike
   - train
   - public bus
   - tram
   - walking
   - other (specify)

4. Once all the routes have been mapped, discuss the findings.
   Rank in order of highest to lowest frequency the modes of transport used.

5. How could your class reduce its travel impact on the environment e.g. is car pooling possible?
Getting around

One major obstacle to using public transport is finding the relevant information about how and when to use it. This exercise challenges students to find and examine website information concerning public transport. They will learn about timetables, route maps, and combining trips and modes of transport to complete their journey.

Exercise 1 - How do I get there?
Write down on a piece of paper a destination in your town/suburb, or in Victoria that you would like to know how to get to. Also write down a date you want to travel and the approximate times (going and returning). The pieces of paper should then be folded up, placed in a container and given a good shake! In turn, take out one destination to research and then provide the would-be traveller with the following information.

1. Can all of the legs of the proposed journey be travelled using public transport? If not indicate which parts will have to be completed by other means eg. walking, taxi.

2. How many modes of transport will be needed to complete your journey?

3. List the exact days, arrival and departure times for a return trip to the destination.

4. How long will the journey take and at what cost?

5. Is there any other information the student needs to know eg. time of the last train?

6. Table 1 shows CO2 emissions per km for all the modes of transport.

<table>
<thead>
<tr>
<th>Mode of transport</th>
<th>Carbon dioxide (CO2) kg / km / passenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ride/walk</td>
<td>0.000</td>
</tr>
<tr>
<td>Tram</td>
<td>0.044</td>
</tr>
<tr>
<td>Rail, city</td>
<td>0.058</td>
</tr>
<tr>
<td>Rail, country</td>
<td>0.051</td>
</tr>
<tr>
<td>Bus, city</td>
<td>0.110</td>
</tr>
<tr>
<td>Bus, country</td>
<td>0.070</td>
</tr>
<tr>
<td>Air travel (in Australia)</td>
<td>0.200</td>
</tr>
</tbody>
</table>

For 1 passenger:

<table>
<thead>
<tr>
<th>Mode of transport</th>
<th>Carbon dioxide (CO2) kg / km / passenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid (Prius, Insight)#</td>
<td>0.110</td>
</tr>
<tr>
<td>Small car#</td>
<td>0.180</td>
</tr>
<tr>
<td>Family car#</td>
<td>0.280</td>
</tr>
<tr>
<td>Large car, 4WD#</td>
<td>0.370</td>
</tr>
</tbody>
</table>

# For each extra car passenger add 0.01 kg/km (to account for passenger weight) and then divide by the total number of passengers including the driver.

Calculate the exact distance to your selected destination and using the table calculate CO2 emissions for the return journey.
Getting around

7. Calculate the CO2 emissions if the journey was made by car (hybrid car and one other of your choice).

Hybrid car CO2 emissions ________________________________

Alternative car (specify which) ________________________________

CO2 emissions ________________________________

8. Using the data in Table 2 calculate the following emissions assuming your proposed journey was made by a family sized, non hybrid car.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Emission rate / km (grams)</th>
<th>My journey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide CO</td>
<td>9.5</td>
<td></td>
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<tr>
<td>Nitrogen oxides NOx</td>
<td>1.4</td>
<td></td>
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<tr>
<td>Particulate matter PM10</td>
<td>0.018</td>
<td></td>
</tr>
<tr>
<td>Particulate matter PM2.5</td>
<td>0.015</td>
<td></td>
</tr>
<tr>
<td>Sulfur dioxide SO2</td>
<td>0.017</td>
<td></td>
</tr>
<tr>
<td>Volatile organic compounds (VOCs)</td>
<td>1.7</td>
<td></td>
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</tbody>
</table>

Table 2
Emission rates for a family sized car

Did you know?
Large petrol 4 wheel drives not only use a lot more fuel than most cars - they cost up to 50% more to run.

ABC Planet Slayer factoid
The real cost of a car

Exercise 1 - My 'dream' car
Do you have a 'dream' car that you want to own one day? If so write down what it is.

Do you think about the environmental costs of owning a car? Explain why or why not.

Have you considered not owning a car? Explain your answer.

Exercise 2 - What will it really cost?
As a class, brainstorm all of the costs involved in owning a car.

Now place the costs into the following categories:
- standing costs (costs to just own a car) eg. insurance
- running costs eg. petrol
- societal costs eg. road building.

How much does it cost to own and run your family car? Go to the following RACV website. Find a car that closely resembles your family car (or one of them) and record the following information.

www.racv.com.au > My Car > Advice and Information > Car Operating Costs

<table>
<thead>
<tr>
<th>THE CAR</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Make and model of your family car</td>
<td></td>
</tr>
<tr>
<td>Total standing cost per week</td>
<td></td>
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<tr>
<td>Total running cost per week</td>
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<tr>
<td>Average total cost per week</td>
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<tr>
<td>Average total cost for the year</td>
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</tbody>
</table>
Exercise 1 - Labelling cars
The Australian Government has developed a fuel consumption label for vehicles. This is because of the expected future decline in oil supply and consequent increase in fuel prices, coupled with the fact that 14.2 percent of Australia’s greenhouse gas emissions come from the transport sector.

a) Using the laws of supply and demand, explain why fuel prices increase when the supply of oil decreases.

b) Identify some of the groups in the economy who will be most affected by increasing fuel costs eg. car manufacturers, commuters in regional and outer suburban areas.

c) Create a graphic organiser using Inspiration® or similar software to highlight the likely long-term effects of rising fuel prices.

d) Write a newspaper article to inform your local community about the fuel consumption scheme. Some of the information consumers will want to know is listed below.

- Why the Federal Government has created the scheme.
- What information the label contains and what it means.
- How to quickly recognise which car is the most efficient.
- Which vehicles will have the label and where the labels will be placed.
- How much CO2 emission will be reduced for every litre they save in consumption.
- What else they should consider when buying a car.
Smarter transport options

1. Transport wordsearch
Find the following transport words in the wordsearch

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2. Smogbuster Day
Download the Smogbusters Way to School Kit from www.waytoschoolkit.infoxchange.net.au
Using the kit, estimate the number of vehicle kilometres travelled by cars to school normally and identify the reduction in vehicle kilometres travelled on the day of change.
The reduction of pollutants and greenhouse gases released into the atmosphere such as carbon dioxide, hydrocarbons, and oxides of nitrogen can then be calculated from this information.

3. Local traffic flow survey
Carry out a simple survey of traffic passing a number of points at different times.
Carbon monoxide can be measured using a meter. Air pollution can be measured by catching the amount of dirt in the air eg. smear a white tile or white card with petroleum jelly and place it securely near a road. Collect samples from different points around the school and students' homes.
Create a spreadsheet for the data and collate the results. Compare the results with traffic flow measurements and draw some conclusions.

As a class, make a submission to your local council based on your findings and recommendations eg. more bike paths in the area.

Contact the EPA AirWatch team for a free copy of their AirWatch manuals.
Email air.watch@epa.vic.gov.au or phone (03) 8710-5566.
4. Finding a use for used tyres
Every year around 18 million tyres are discarded in Australia and half end up in landfill. Less than 17 percent are recycled. Every used tyre can produce 4.5kg of reusable rubber.

Other countries are not so wasteful – with tyres being turned into a variety of useful products including sandals and even homes.

Working in groups, and using some creative thinking techniques such as de Bono’s Random Word, create some new products from old tyres.

Present these to the class and then create an advert to sell the items to students, parents and teachers.

5. Media response
Look for articles or letters to the editor on the issue of rising fuel prices. Write a response based on what you have learned in this unit.

6. How green is my car?
Examine your family car (or one of them) and rate it in terms of ‘greenness’ using the resources listed in this unit. Then imagine the car is for sale, write an advert and include some information on its ‘greenness’. Alternatively, pick a car from the ‘For Sale’ pages and re-write the advert in order to appeal to environmentally conscious buyers.
Aims and overview
In this unit students will explore personal definitions of success and achievement, the pressures of a consumer culture and ways to achieve a sustainable lifestyle.

Key concepts
Consumer culture, needs and wants, measures of success, consumerism, ‘affluenza’.

Learning outcomes
At the end of the unit students should be able to:
– recognise that everyone is a consumer and every purchasing decision and choice has an impact on the environment
– evaluate different measures of success and achievement
– assess the relationship between life style choices and living sustainably.

Background information
About 12 percent of the world’s population is responsible for 60 percent of consumer spending. Why aren’t people content to just satisfy their basic needs? There is no doubt that many of our wants are created by advertisers. Clever slogans and other techniques are designed to create a desire for their products.

A 2002 Newspoll survey for The Australia Institute found that 56% of Australians believe they are spending nearly all their income on the bare necessities of life and 46% of people with incomes of over $70,000 say they cannot afford everything they really need.

What is it that consumers want? Some commentators suggest it is the lifestyle of the rich and famous they are trying to copy – hence the demand for larger homes, home theatres, personal trainers, and luxury brand products. The constant ‘trading up’ to more expensive brands has become known as ‘affluenza’, ‘competitive consumption’ or ‘luxury fever’.

However there are costs, personal, social, economic and environmental to this ‘affluenza’. Examples of these costs include: rising personal debt levels, longer working hours, lack of time to spend with family and friends, loss of connection with the local community, and environmental degradation through using-up scarce and non-renewable resources.

This unit, through an exploration of the meaning of consumerism and the costs and benefits of a consumer culture, encourages students to develop their own answers to the question ‘What does ‘the good life’ mean?’

Resources
Adbusters www.adbusters.org
Victorian Government www.goforyourlife.vic.gov.au
World Wildlife Fund/Center for a New American Dream www.ibuydifferent.org
SECTION E
A consuming culture

Introductory activity
A major factor in constructing our views on money, possessions and happiness is how we think about and define success. It is quite common to define success for ourselves and others by what we/they do for work (e.g., I am a lawyer, footy player, teacher) and by what we/they possess.

1. What is success?
Make a list of people you consider to be successful.

I think the following people are successful...

2. In small groups, share your list and discuss the reasons why you consider these people to be successful. Even if you have very different people in your lists, they may have the same characteristics you admire, e.g., a competitive spirit. Make a list of the characteristics your group admires.

Characteristics of successful people:

3. As a group propose a definition of success. Write it in the space below and illustrate it with a drawing or symbol.

SUCCESS IS...

4. Compare your definition with the rest of the class and develop, if possible, a class definition. Rewrite your own definition if that has changed.

Class definition of SUCCESS...
What do I want?

Exercise 1 - Me, money and shopping
Highlight the statements below that relate to you and complete the following sentences.

1. I have a regular job.
2. I work because __________________________________________.
3. I get regular pocket money.
4. I have more money to spend than I really need.
5. My parents want to know how I spend my money.
6. My parents give me advice on managing money.
7. I usually get money when I ask for it.
8. I never have enough money to buy what I want.
9. I love to shop!
10. I hate shopping!
11. Shopping means __________________________________________
12. Items I buy regularly with my own money include:
   Clothing, snacks, magazines, entertainment, cosmetics, presents, other (please specify).

Did you know?
Over its life, a car that is 2 litre/100 km more fuel efficient will save 5,000 litres of fuel and 12 tonnes of greenhouse gas – as well as thousands of dollars for the driver.

ABC Planet Slayer factoid
What do I want?

Exercise 2 - Mapping out our goals

In the mind map above, Chris has set out the goals he hopes to achieve between the age of 21 and 25.

a) In pairs, examine the goals and assess the likelihood of Chris achieving them all in the time frame he wants.

b) Suggest reasons why Chris has so many goals.
What do I want?

c) Outline the costs and benefits of trying to achieve the goals so quickly.

<table>
<thead>
<tr>
<th>Costs</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exercise 3 - My map, my future!
The mind map above was created using Inspiration® software. Create your own mind map using Inspiration® (or similar software) or butchers’ paper, crayons, and glitter glue. What goals would you like to achieve by age 25 or 30?

In pairs or small groups, compare your mind maps. Make a note below, and reflect upon, any goals:
- that are similar
- that are very different
- that you could live without
- that you believe are essential.

---

Did you know?
A household that dries all its clothes in an electric clothes drier generates over a tonne of greenhouse gas each year. That’s as much as you’d produce driving a small car from Sydney to Cairns and back!

ABC Planet Slayer factoid
### Exercise 1 - Wish lists and advertising

Identify three items on your ‘wish list’ for the future from Worksheet E1 and find one advert that relates to each wish. Complete the table and then answer the following questions for each item.

<table>
<thead>
<tr>
<th>What I want</th>
<th>Why I want it</th>
<th>Relevant advert</th>
</tr>
</thead>
<tbody>
<tr>
<td>eg. house</td>
<td>security, wealth</td>
<td>Bank home loan advert showing young couple in their first home looking very happy and successful.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Exercise 2 - Understanding the message

Successful adverts carry very persuasive messages that are used to emotionally ‘hook’ the consumer. Identify at least one current or recent advert that contains the following appealing messages.

- Buy this product/service and you will...
  - join a wonderful group of people
  - be appreciated
  - be rewarded
  - be respected
  - be more like famous or wealthy people
  - enjoy escape/adventure/excitement
  - be rebellious
  - be ‘cool’
Why do I want what I want?

Exercise 3 - Words that sell
Some of the most persuasive words in advertising are said to be:

<table>
<thead>
<tr>
<th>ANNOUNCING…</th>
<th>introducing…</th>
<th>revolutionary</th>
</tr>
</thead>
<tbody>
<tr>
<td>offer</td>
<td>exciting</td>
<td>fresh</td>
</tr>
<tr>
<td>MAGIC</td>
<td>AMAZING!!</td>
<td>improvement</td>
</tr>
<tr>
<td>HURRY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EASY</td>
<td>miracle</td>
<td></td>
</tr>
<tr>
<td>LAST CHANCE</td>
<td></td>
<td>bargain</td>
</tr>
</tbody>
</table>

Test this theory by:

a) using the ideas below to promote a new ‘beauty’ soap, and
b) creating an advert for either the same product or one of your choice using antonyms (opposites) of the above words to describe the product eg. stale, conventional, rip-off, old, difficult, boring.

<table>
<thead>
<tr>
<th>Spring soap</th>
<th>- Attractive model with glowing, youthful skin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Promise of beautiful skin and lots of friends</td>
</tr>
<tr>
<td></td>
<td>and admirers</td>
</tr>
<tr>
<td></td>
<td>- Catchy slogan</td>
</tr>
<tr>
<td></td>
<td>- Appeal to the fear of ageing</td>
</tr>
</tbody>
</table>

Exercise 4 - Analysing ‘youth culture’ texts

a) Choose a text that has implicit messages linked to this unit eg. lifestyle, aspiration, identify, consumerism, and then discuss/explore the techniques used to convey messages to the audience.

<table>
<thead>
<tr>
<th>Texts</th>
<th>Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Film</td>
<td>‘casting’</td>
</tr>
<tr>
<td>TV program</td>
<td>background/settings</td>
</tr>
<tr>
<td>Music videos</td>
<td>language,soundtrack</td>
</tr>
<tr>
<td>Magazine article</td>
<td>props, brands, product placement</td>
</tr>
<tr>
<td>Advertisements</td>
<td>emotional appeals</td>
</tr>
</tbody>
</table>

b) Produce your own text emphasising a ‘sustainable lifestyle’. Create an advert, script for an advert, or piece of reflective or imaginative writing on the pressures to consume.
Money today, happiness tomorrow…hopefully

Thirty per cent of full-time workers admit they are neglecting their families due to overwork, according to a new report released today by The Australia Institute.

The report identifies the widespread propensity of Australians to invest in their jobs rather than in their families and friends in the belief that the sacrifice will pay off in the longer term. This phenomenon is dubbed the Deferred Happiness Syndrome.

“We all have to make hard decisions in life, but it appears that many Australians are more afraid of risking their superannuation than they are of risking their relationships with their partners and children. Kids are only young once, and when asked they say they prefer time with parents rather than toys and holidays,” said Dr Clive Hamilton, Executive Director of The Australia Institute.

Based on a Newspoll survey of full-time workers, the report says that men are more prone to Deferred Happiness Syndrome than women.

Releasing the study, Carpe Diem? The Deferred Happiness Syndrome, Dr Hamilton said: “This study confirms that the culture of long hours encourages many people to jeopardise their relationships with their partners and children.”

“Deferrers set their sights on a grander lifestyle later on, but build up ‘relationship debts’ to get there. They risk ending up with healthy bank balances and bankrupt marriages. “Surprisingly, people from ‘laidback’ Queensland are more prone to the syndrome than those in other states,” he said.

The report found that high and middle-income households are much more likely to suffer from Deferred Happiness Syndrome than low-income households.

The study divides Australians into ‘deferrers’ who want the money later but accumulate relationship debts to get it, ‘gratifiers’ who want the money now and accumulate financial debts, and ‘downshifters’ who break the link between money and happiness and concentrate more on their relationships.

The Australia Institute www.tai.org.au

Exercise 1 - Carpe Diem - Sieze the Day

Discuss the media release in pairs and then summarise the meaning of ‘deferred happiness’.

Write down a personal example of deferring happiness and reflect on whether the deferral was worthwhile.
What is it really going to cost?

c) Explain in your own words who the ‘gratifiers’, ‘deferrers’ and ‘down-shifters’ are and then add an image to symbolise each one.

d) Create a 3 column table using MS Excel or similar software program and outline the advantages and disadvantages of being a member of each group.

e) In small groups, discuss which, if any, of the categories you are likely to join. Comment below on your classmates view of your self-assessment.

Exercise 2 - My Time Diary
Being part of a consumer culture often involves being very busy with little time to relax. Create a spreadsheet in which you can record all of your daily activities (choose a typical school day) and the exact time you began the activity and the exact time you stopped. Be as specific as possible. See the examples below for a start. Also record any other activities you were also doing at the same time.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time began</th>
<th>Time ended</th>
<th>Total time</th>
<th>Other activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brushing teeth</td>
<td>7:15 am</td>
<td>7:20 am</td>
<td>5 min</td>
<td>Listen to radio</td>
</tr>
<tr>
<td>Waiting for train to school</td>
<td>8:00 am</td>
<td>8:10 am</td>
<td>10 min</td>
<td>Talked to friends, sent text message</td>
</tr>
</tbody>
</table>

Exercise 3 - Time for reflection
Look at your time diary. What did you spend the most time doing? Create some categories for the activities such as ‘homework’ and ‘sport’. Which category of activities did you spend the most time doing? Is this what you expected? Compare your diary with a friend and discuss the similarities and differences. Are there ways in which your friend spent time that you would like to incorporate in your life?

Write a paragraph reflecting on your answers to the above questions.
Exercise 4 - Faster or slower?
For each of the time-saving decisions below, write down the benefits of the ‘faster’ option and any potential benefits of the ‘slower’ option. At the end, choose a few of your own time-saving decisions and list the benefits of both options.

<table>
<thead>
<tr>
<th>Decision</th>
<th>Benefit of faster option</th>
<th>Benefit of slower option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving a car or riding a bike</td>
<td>Car is much faster, can carry more items</td>
<td>Exercise, cheaper, no emissions to environment</td>
</tr>
<tr>
<td>Driving a car or taking public transport</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Texting a friend or sending a card on his/her birthday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating fast food or cooking a meal at home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using plastic bags from the supermarket or canvas bags</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Separating recyclables from rubbish or throwing it all away</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washing dishes by hand or using a dishwasher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buying groceries from three different local shops or buying from a supermarket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordering a CD/DVD via the internet or buying from a record store</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A consuming culture

1. Create some slogans!
Consuming sustainably potentially means questioning some common perceptions of a consumer culture. Some slogans that have become well-known include ‘small is beautiful’ and ‘live simply so that others may simply live.’

Working individually or with a partner, create some new slogans that reflect issues raised in this unit. Pass the slogans around the class and encourage other students to make comments. Based on the feedback, select one slogan and create a colourful poster or multimedia presentation illustrating your message.

1. 
2. 
3. 

2. Consumer culture survey
Explore how attitudes affect consumer behaviour by creating a survey with questions based on issues raised in this unit.

3. ‘Green’ advertising
Using some of the persuasive advertising techniques learned in this unit, create some powerful adverts promoting either the use of ‘green’ products or a more sustainable lifestyle.

4. From trash to treasure
As a class, collect a range of discarded items and create as many new products as you can from them. Hold a lunchtime sale and raise awareness of recycling possibilities.

5. From trash to art
As an individual, or in a group, collect a range of discarded items and construct a sculpture which could be placed in a garden. Consider appropriate materials (think about rusting and biodegradability potential), then design and construct your sculpture.

6. Sustainable Consumption Festival
As a class, year level or whole school, organise a consumer festival. Invite ‘green’ producers and environmental organisations to be involved.

7. So, what is a ‘good’ way to consume?
Write a reflective piece or article for a newspaper or magazine with your own answer to the above question.
SECTION F
Wealth, consumption and happiness

Aims and overview

In this unit students will explore what it means to be happy and to what extent there is a link between wealth and happiness and in turn consumption and happiness. Students will explore the concept of social sustainability using problem gambling as a context.

Key Concepts

Wealth, happiness, consumption, social sustainability, problem gambling, community health, personal health.

Learning outcomes

At the end of the unit students should be able to:
- analyse connections between wealth, happiness and consumption
- apply one strategy to assist them in determining to what extent a new product or service will contribute to their happiness
- explain the concept of social sustainability and the links between social sustainability and links in the community such as problem gambling.

Background Information

Gambling is any activity where money (or anything of value) is put at risk on an event of uncertain outcome that relies, in part or entirely, on chance. Gambling includes:
- Gaming – where the outcome is decided largely by chance. Examples include lotteries, pokies, bingo, Scratchies, casino and card games.
- Betting or wagering – on the outcome of a future event. Examples include horse racing, sports betting, Internet betting and TAB betting.
- Speculation – such as gambling on the stock market.

Appropriate definitions for teachers to use and refer to are:

Responsible gambling - Responsible gambling is about minimising harm caused by problem gambling while accommodating those who gamble without harming themselves or others.

Problem gambling - Problem gambling is defined as behaviour characterised by difficulties in limiting money and/or time spent on gambling, which leads to adverse consequences for the gambler, others or for the community.

Useful Resources

www.problemgambling.vic.gov.au
www.justice.vic.gov.au > gambling and racing > responsible gambling
www.youthgambling.com
www.betterhealth.vic.gov.au
www.austgamingcouncil.org.au
SECTION F
Wealth, consumption and happiness

It is illegal for anyone under 18 to gamble, including on Scratchies and Lotto. In 2006 the Department of Justice published Problem gambling: a guide for Victorian schools (copies can be obtained by visiting www.problemgambling.vic.gov.au/contact-us). It cites a 2000 study that found that 41 per cent of year 8 students had gambled in some form over the past 12 months. Scratchies and lotto are the most common forms of gambling for young people. In the same study close to 50 per cent viewed gambling as a way to make money. The guide cites research that suggests that problem gambling in adolescents may be more prevalent than the adult population. Clinicians claim that these gamblers rarely identify as problem gamblers, possibly because the stereotyped gambler has little in common with an adolescent. Young problem gamblers are more likely than non-gamblers to report higher rates of depression and anxiety, participate in risky behaviour such as alcohol or drug use, be involved in crime and develop problems with family and friends. It has been shown that young adolescents are generally still forming their attitudes to gambling, leading to early intervention as a strategy to reduce problem gambling.

Issues raised in this section may lead to notice of problem gambling in students or within students’ families. Any issues should be handled with sensitivity. Gamblers’ Help Line is 1800 858 858. Kidshelp Line – www.kidshelpline.com.au or 1800 551 800

Background Issues

Many studies show a rapid increase in happiness when moving from poverty to moderate affluence but diminishing returns, that is, smaller increases in happiness as wealth increases from there. Examples of lotto winners who are not significantly happier and even less happy one year on from their win are reported regularly.

There are no doubt some lotto winners from moderately wealthy backgrounds that are significantly happier do counter these claims.

It may be the case, given a starting point of modest wealth, that more money does not necessarily cause more happiness, but it does not necessarily cause unhappiness either. The question is to what extent the fundamental ingredients of happiness are dependent on money, so to what extent those of moderate and great wealth can have equal access to happiness. This then leads to the question of how much money is needed to be happy and whether more and more consumption is going to generate more and more happiness – it is not only a question of why consume but what to consume and how to consume.

It is common for people to pursue activities like gambling in pursuit of quick wealth which they believe will either create happiness or stop unhappiness. To the extent that people disassociate wealth and happiness, they are less likely to undertake activities like gambling for reasons of pursuing wealth.

The drive for environmental sustainability is increasingly being recognized as influencing and being influenced by economic and social sustainability. Environmental sustainability is informed by values and judgements about the
SECTION F
Wealth, consumption and happiness

kind of society we want. The nature and maintenance of social sustainability is examined in F2 using problem gambling as a context. Around 15% of regular gamblers are problem gamblers, with gamblers under 25 twice as likely to develop problems. (Source: Problem Gambling – A guide for Victorian Schools, 2006, Department of Justice). On the one hand weak communities can increase problem gambling, but on the other hand problem gambling can weaken communities.

The approach in F1 – Exercise 4 draws from the work of Alain De Botton in The Consolations of Philosophy, Penguin, 2000, Chapter 2.

Other useful links for F1 are:


http://www.theaustralian.news.com.au/story/0,25197,23144105-27702,00.html – The Wowsers of Social Affluenza by Paul Kerin, The Australian 02/02/08, arguing that people with affluenza should be left to enjoy their consumption.

Useful links for F2 are:


The parameters of social sustainability used in F2 are drawn from:

Is happiness about having more and more money?

Exercise 1 – Is happiness dependent on money?

a) Write down what you believe is necessary for happiness

b) How many of the things that you listed could only be achieved with lots of money?

c) Many studies show that there is a sharp increase in happiness when moving from poverty to modest wealth, but not a great change in happiness when moving from modest wealth to great wealth. For example, some studies of lotto winners show that within a year of the win happiness for most is back to where it was before winning.

i) Why would happiness increase sharply when coming out of poverty? Could those reasons continue to build happiness into the future as wealth increases?

ii) Why do you think a great leap in wealth is not necessarily associated with a great leap in happiness?

Exercise 2 – What is happiness?

Consider the following words and choose one that you think has the greatest link with happiness and one that you think has the weakest. Explain what you think those words mean and what the difference is between them. How would you define happiness?

amusement    well-being    contentment    excitement    flourishing    pleasure

Is happiness about having more and more money?
Is happiness about having more and more money?

Exercise 3 – Can money buy happiness?
Form a small group and complete the following tasks

a) The slogan for TattsLotto is “Life Could be a Dream”. What does this slogan suggest about the link between money and happiness? Do you agree?

b) Advertisements often link happiness and the product or service featured in the ad, for example “What’s your celebration?” (a well known Jewelers). Can you think of an advertisement that links happiness with a product? Describe the advertisement and explain what link to happiness the advertisement is trying to make.

c) To what extent do you think buying a product is a cure for unhappiness? What do you think are cures for unhappiness?

Exercise 4 – What is necessary for happiness?
Epicurus was a philosopher born in 341 B.C. He thought that what was necessary, or essential, for happiness were friends, freedom and thought (analysis of the main causes of anxiety in your own life)

a) Discuss with the rest of the class: why Epicurus might have thought friends, freedom and thought were important for happiness, to what extent each of these are dependent on wealth or having lots of possessions and whether you agree with this list

b) Epicurus thought that to avoid buying things we do not need or regretting not being able to afford something that “the following method of inquiry must be applied to every desire: What will happen to me if what I long for is accomplished? What will happen if it is not accomplished?”

Complete the exercise below. An example is given to illustrate one possible response

i) Identify a product or service you think you need to be happy e.g. in order to be happy when I go out, I need a new outfit
Is happiness about having more and more money?

**ii)** Ask yourself – could you have the desired product and not be happy? Could you be happy but not have the desired product? E.g. Could I spend money on new clothes and still not be happy? Could I be happy going out and not spending as much money on clothes?

**iii)** If an exception is found, the desired product cannot be a necessary and sufficient cause of happiness, (i.e. not only essential but all I need to be happy in that instance) e.g. It is possible to have a bad time going out in my new clothes if, for example, I am anxious and worried. It is possible for me to be happy in the clothes I have now if I am feeling relaxed.

**iv)** The exception should be taken into account, e.g. In so far as I can be happy in new clothes going out, this depends on being relaxed; I can be happy without spending money on new clothes if I am feeling relaxed.

**v)** Identify the true need e.g. Happiness depends more on feeling relaxed than having new clothes.

c) Think, Pair, Share – Write down what you like and/or don’t like about this strategy, pair up with a partner and share your views. Share your views with the rest of the class.

**Exercise 5 – Graffiti wall**
A marketplace in Ancient Greece, around the time of Epicurus, was full of graffiti advising shoppers that money would not necessarily buy happiness.

Create your own graffiti wall in class, with each class member contributing a message about the link between wealth, consumption and happiness.
Exercise 1 – Defining social sustainability
Form a small group and complete the following activities

There is no one definition of social sustainability. At its most basic level its meaning tries to capture what it is that makes a community healthy and livable now and also in the future.

One way of expressing social sustainability is through the concepts of:

* **Equity** – equal opportunities for all community members e.g. providing a pre-school dental service free to all members of the community

* **Diversity** – valuing different cultures e.g. supporting a range of festivals.

* **Interconnectedness** – things in place that link people e.g. youth clubs.

* **Quality of life** – fostering material and non-material well-being e.g. providing lollypop people at crossings to help foster a sense of safety.

a) With your group, brainstorm other examples of equity, diversity, interconnectedness and quality of life that are found in your local community.

<table>
<thead>
<tr>
<th>Equity</th>
<th>Diversity</th>
<th>Interconnectedness</th>
<th>Quality of life</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) Below are some examples of consequences that may arise out of problem gambling for some problem gamblers. They may impact not only on the personal health of the gambler but community health too. For each consequence, write down whether your group thinks equity, diversity, interconnectedness or quality of life would be most affected and why.

<table>
<thead>
<tr>
<th>Rigging a local soccer game to pay back gambling debts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stealing to get money for gambling</td>
</tr>
<tr>
<td>Dropping out of local clubs to get more time to gamble on the poker machines</td>
</tr>
<tr>
<td>Distressing members of their family and friends</td>
</tr>
<tr>
<td>Going into debt that gambler is unable to pay back</td>
</tr>
</tbody>
</table>
Social sustainability and problem gambling

Exercise 2 – Missing Links

a) Sometimes a community weak in social sustainability can contribute to problem gambling. The table below shows some wants that people are trying to satisfy when gambling and things lacking in the local community that may have contributed to choosing gambling. Match the want with what is lacking.

<table>
<thead>
<tr>
<th>Want</th>
<th>What is lacking in the community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entertainment</td>
<td>Activities that cater for all ages</td>
</tr>
<tr>
<td>Get some money</td>
<td>Clubs for people with similar interests</td>
</tr>
<tr>
<td>Loneliness</td>
<td>A variety of events</td>
</tr>
<tr>
<td>Having fun with the family</td>
<td>A variety of jobs</td>
</tr>
</tbody>
</table>

Exercise 3 – Improving social sustainability

Work with a partner on this exercise

a) Imagine that your local council is looking for ideas on how to improve your local community. Write down at least four ideas that could improve the social sustainability of your community. They should be specific ideas relevant to your community e.g. if you think there should be more multi-age activities, then think of some specific kinds of activities that could be done in your area

b) Draft a letter to your council stating your ideas, explaining what the problem is in the community that this idea would help solve and outlining what needs to happen for the idea to work.

Share your ideas with the rest of the class
Resource book evaluation sheet

Consumer Affairs Victoria thanks you for using the Consuming Planet Earth resource book, and would appreciate you taking a few minutes to complete this evaluation sheet. Your feedback is very important to us. Any comments and suggestions for improvement will be appreciated.

1. Tick the resource book you are providing feedback on? (Please tick)
   - □ Consuming Planet Earth
   - □ English
   - □ Mathematics
   - □ Health & Wellbeing
   - □ Commerce

2. Which sections of the resource book have you used with your students? (Please tick)
   - □ SECTION A
   - □ SECTION B
   - □ SECTION C
   - □ SECTION D
   - □ SECTION E

3. Which of the sections have your found most useful and relevant to your course? (Please tick)
   - □ SECTION A
   - □ SECTION B
   - □ SECTION C
   - □ SECTION D
   - □ SECTION E

4. Which Year level have you used the material with? (Please tick)
   - □ Year 7
   - □ Year 8
   - □ Year 9
   - □ Year 10
   - □ Year 11

5. How would you rate the relevance of the curriculum material to the Victorian Essential Learning Standards? Or the Victorian Certificate of Applied Learning (VCAL)? (Please tick)
   - □ Very relevant
   - □ Relevant
   - □ Partly relevant
   - □ Not relevant at all
Resource book evaluation sheet

6. How would you rate the ‘user friendliness’ of the resource book in terms of:
   a) photocopiable worksheets
      □ Excellent □ Very good □ Good □ Passable □ Poor
   b) teacher notes
      □ Excellent □ Very good □ Good □ Passable □ Poor

7. Suggestions for improvement
   You may wish to suggest some new topics which could be added to the online version of the resource book. Please outline these below.

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

8. Any other suggestions (for example, additional teacher notes, activities, resources).
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

Contact details (optional):
Name  ____________________________________________________________
School __________________________________________________________
Phone  __________________________________________________________
Fax    __________________________________________________________
Email  __________________________________________________________

Please send us this evaluation by fax or post.

Should you have any other suggestions in the future, please contact us:
Email consumerstuff@justice.vic.gov.au
Phone (03) 8684 6042 or (03) 8684 6043
Fax  (03) 8684 6440
Mail Consumer Affairs Victoria
   Education and Information Branch
   GPO Box 123
   Melbourne VIC 3001

Thank you for your time and valuable feedback!
Services from Consumer Affairs Victoria are also available at Ballarat, Bendigo, Box Hill, Dandenong, Geelong, Mildura, Morwell, Reservoir, Shepparton, Wangaratta, Warrnambool and Wodonga.

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