Sustainability in home economics

We are all consumers. Consume to minimise the footprint!
Introduction

The United Nations has dedicated 2005 to 2014 to improving and informing knowledge and action for sustainable development. The aim of the United Nations Decade of Education for Sustainable Development is to promote and improve the integration of Education for Sustainable Development into the educational strategies and action plans at all levels and sectors of education in all countries.

We are all consumers, some more so than others. Consuming to ‘keep up with the Joneses’ is having a detrimental impact on the environment now and in the future. Everyone must learn how to think with the concept of ‘forever’:

This means that education for sustainable development involves learning how to make decisions that balance and integrate the long-term future of the economy, the natural environment and the wellbeing of all communities, near and far, now and in the future.

www.unesco.org/education
(accessed 5/09/07)

Sustainability has a natural fit within home economics as it is about good management of resources such as water, energy, and food. The energy footprint is often used to measure how conscientious we are about energy use, but a food footprint is also important in supporting sustainability. For example, in Australia we throw out a fifth of the food that we buy. The amount of water needed to grow this is equivalent to what people in Sydney and Melbourne consume in one year.

Home economics teachers have a critical role in providing skills and knowledge for students to feed themselves without starving the planet of resources. Consumption practices impact on energy use in many ways from production to disposal.

Consumption processes consist of:

- **Production**
  - Primary
  - Secondary

- **Buying**
  - Shopping behaviour. Clothes and food

- **Use of products**
  - Water, energy and transport

- **Disposal**
  - Recycle, re-use

In an international study of youth in 24 different countries, young consumers show an understanding of the environmental impact of the last two phases, but considerably less in the first two phases. One of the included activities in this kit – at Victorian Essential Learning Standards (VELS) Level 6 – will enable students to assess their views.

This resource is designed to provide the teacher with ready-to-use activities to promote sustainability in home economics at Levels 5 and 6. Activities can be varied to suit either level. To fully imbued the concept of sustainability a whole-school approach is essential and the concepts of sustainability should be ongoing and not a once only lesson. These activities demonstrate a multi-domain approach. Where an integrated approach is possible there is flexibility in the activities for this to occur.

In this resource students investigate the impact that food choices make on the environment. A range of food is prepared to demonstrate how different choices have different impacts on the environment. Students will develop an appreciation that good choices are an important part of everyday life now and into the future, and that there are many options for sustainable alternatives that are easily prepared and economical. In these activities there are opportunities for students to work individually or as a group to design, plan, produce and evaluate food. They can work with design briefs to achieve solutions to design brief challenges.
**Links to the Victorian Essential Learning Standards**

The Victorian Essential Learning Standards (VELS) were developed by the Victorian Curriculum and Assessment Authority (VCAA) as the basis for curriculum and assessment in Victorian schools from 2006. The VELS ‘describe what is essential for Victorian students to achieve from Prep to Year 10. They provide a whole school curriculum planning framework that sets out learning standards for schools to use to plan their teaching and learning programs, including assessment and reporting of student achievement and progress’ (http://vels.vcaa.vic.edu.au).

The VELS are structured according to three learning stages: Years Prep to 4 — Laying the foundations; Years 5 to 8 — Building breadth and depth; and Years 9 to 10 — Building pathways.

These activities specifically relate to the standards from Level 5 and Level 6 of the VELS. Level 5 is broadly associated with schooling from Years 7 and 8 and is part of the Building breadth and depth learning stage. Level 6 is broadly associated with schooling from Years 9 and 10, which represents the Developing pathways learning stage.

This document includes the relevant standards that can be achieved with this program. These activities focus on standards from the following VELS domains:

- Health and Physical Education
- Interpersonal Development
- Personal Learning
- Civics and Citizenship
- The Humanities (Economics and Geography)
- Science
- Design, Creativity and Technology
- Thinking Processes

Specific standards are listed at the end of this publication. Check other standards from these domains and check other domains across all strands as there may be others more suited to the focus you wish to take or to the needs of your whole-school curriculum.

The food footprint can occur at all stages from the paddock to plate. This unit includes lessons incorporating some of these stages. Components of sustainability that can be considered from a home economics perspective are:

- **Water**: growing, water use in processing and packaging, washing
- **Waste**: preparation, processing, quantity, purchasing, leftovers
- **Energy**: growing (agro-machinery), transporting, processing, packaging, storage, preparing
- **Biodiversity**: monocultures, multinationals, reduction in food varieties

In home economics, and for each component of sustainability, clear connections can and should be made to food.
Level 5: Food footprint

This unit enables students to make the links between choices that are made about food and their impact on the environment.

Themes for lessons linked to sustainability may focus on the following:

- Food sources
- Energy use for transport and manufacture
- Eat unprocessed
- Choose local
- Follow the seasons
- Reduce packaging
- Reduce waste
- Eat to preserve biodiversity
- Animal welfare
- Organic choices

Overview

<table>
<thead>
<tr>
<th>Week</th>
<th>Learning and teaching: Lesson focus</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Topic: Food footprint</td>
<td>Prepare a simple but healthy snack such as salad-filled pocket bread using a mixture of local and imported ingredients. (Use a pre-purchased wrap, and include its origin in your considerations.)</td>
</tr>
</tbody>
</table>

Level 5 Activity 1: Food miles and black balloons*

Summary: Ways in which food production impacts on the environment. Energy use and food.

This activity is designed to start students thinking about the number of miles food travels from point of origin to the supermarket.

Food miles are measured using ‘black balloons’, a concept they should be familiar with from the You have the power. Save Energy campaign (see www.saveenergy.vic.gov.au).

Task: Using the information in the Food Miles in Australia document (CERES, 2007) and the Teacher guide on page 5, ask students to predict the extent of black balloons used for a range of foods, such as those listed on the template on page 7.

Level 5 Activity 2: Impact of the food industry*

Task: The worksheet Impact of the food industry looks at resource use and the environment (see page 8). Students attempt to complete the blank template thinking about resources used and environmental impact, suggesting the energy usage in the stages of food production from paddock to plate.

Students may work in small groups and be allocated to one aspect of the food production process.

*See supplementary support materials for this activity following this table.
<table>
<thead>
<tr>
<th>Week</th>
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</table>
| 2    | **Level 5 Activity 3:** Reducing the food foot print  
**Task:** Trace the food chain of each ingredient in the wrap produced last week. A world or Australian map will assist to make this clearer.  
What food choices leave a foot print? Using the filled wrap or pocket as an example, investigate alternative choices for all ingredients that would reduce the impact on the environment. Justify all choices.  
Redesign the wrap reducing the food foot print.  
Compare the resource use (energy, food miles and production) of the pita and yoghurt. Design other meals that could include the yoghurt or bread. | Make a pita bread, and make yoghurt to use for a yoghurt dressing or dip such as tzatziki. (Yoghurt will need to be made at least four days before required. For a recipe see www.landlearn.net.au/curriculum > Food and food production > Making yoghurt). |
| 3    | **Level 5 Activity 4:** Choose local  
**Task:** Investigate local food production industries. Use an enlarged map of the area and allocate students to an area within a 100-mile radius. A Google map search could be used to print a map in rural and city areas.  
Note: Bananas are popular, but refer back to week 1 to check the impact of this popular fruit in regard to sustainable consumption. Students could choose another popular food item and research its closest producer. | Plan and prepare a meal using local fruit and/or vegetable ingredients. (Planning will depend on the skills of the students.) |
| 4    | **Level 5 Activity 5:** Follow the seasons  
**Task:** Compare fruit and vegetables available in the supermarket or at the grocer with those that are in season. Resources such as Cookery the Australian Way (7th ed, Cameron and Russell, 2003) or the Melbourne Market Authority’s MarketFresh website (www.marketfresh.com.au) will assist. Investigate the source of some of the out of season fruit and vegetables and the impact on the environment.  
Investigate options that have a minimal impact. | Plan and prepare a fruit and/or vegetable meal using seasonal and where practical local fruit and/or vegetables. |
Level 5 Activity 1: Food miles and ‘black balloons’

This activity is based on information in Food Miles in Australia: A preliminary study of Melbourne, Victoria (Gaballa, S and Abraham, AB 2007). An update of this report will be available from the end of March 2008 at www.ceres.org.au/projects/foodmiles.html.

Ask students to predict the number of black balloons used for a range of foods, such as the seven listed below. A template with food names has been included in this kit (you will need to cut out the separate food items). Students discuss where they believe each food is positioned in a ranking of black balloon costs from ‘paddock to store’. There are several alternatives for completing this task:

1. **As small group:** ask students to predict the energy use of each food product and report back to the whole group and compare results.

2. **As a ‘think pair share’ activity.**

3. **As a whole group task,** with students standing at the front holding cards representing the selected foods.

A template for the following foods has been included in this kit, but depending on practical sessions for this lesson, other foods may be investigated. The suggested foods are:

- cereal
- savoury biscuits
- cheese
- onions
- white sugar
- bananas
- fresh chicken

The foods are selected from the Food miles in Australia report from the CERES website, Tables 4.1 to 4.7. This gives detailed information about the energy costs of transport from paddock to plate of each of these foods. The tables in the report include:

4.1 **Table 1** Food kilometres and emissions estimates for fruit and vegetable food items

4.2 **Table 2** Food kilometres and emissions estimates for meat and dairy food items

4.3 **Table 3** Food kilometres and emissions estimates for cereal and legume food items

4.4 **Table 4** Food kilometre and emissions estimates for non-core food and beverage food items

4.5 **Table 5** Summary of results for food categories of food basket items

4.6 **Table 6** Packaging kilometres

4.7 **Table 7** Overseas food item kilometres and equivalent Australian item kilometres

4.8 **Table 8** Other greenhouse gas emission estimates

More detail about each of the foods is available in the report, as well information about packaging. Food miles in Australia has information about several other foods that may be selected for the activity.

Following is Table 4.1, an example of information that is available for this activity. Except during occasional updating, the report will stay on the CERES website permanently and teachers are encouraged to access it from there. It is important to access the full report as the data tables need to be viewed within the context outlined in the full document.
## Level 5 Activity 1

### 4.1 Table 1: Food Kilometres and Emissions Estimates for Fruit and Vegetable Food Items

<table>
<thead>
<tr>
<th>Food Category</th>
<th>Food Item</th>
<th>Transport km</th>
<th>Emissions: a proportion of total food basket road transport emissions for each food item in t CO₂-e(^{25}). Road transport km x 0.8062(^{26}) t CO₂-e</th>
<th>Emissions: 1 tonne of food item transported by road. Road transport km x 0.0002205 t CO₂-e</th>
<th>Emissions: 1 kg of food item transported by road in kg of CO₂-e</th>
<th>Emissions: 1 kg of food item transported by road in grams of CO₂-e</th>
<th>Column 7 equivalent to the approx. number of Black Balloons(^{27}) (50g CO₂ per balloon)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fruit and Vegetables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apples</td>
<td>112km</td>
<td>90,2944</td>
<td>0.0246960</td>
<td>24.696</td>
<td>25g</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Oranges</td>
<td>567km</td>
<td>457,1154</td>
<td>0.1250235</td>
<td>125.0235</td>
<td>125g</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Orange juice</td>
<td>2024km</td>
<td>1631.7488</td>
<td>0.4462920</td>
<td>446.292</td>
<td>446g</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>Tomatoes</td>
<td>1618km</td>
<td>1304.4316</td>
<td>0.3567960</td>
<td>356.796</td>
<td>357g</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>Potatoes</td>
<td>155km</td>
<td>126.9610</td>
<td>0.0341775</td>
<td>34.1775</td>
<td>34g</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Pumpkin</td>
<td>361km</td>
<td>291.0382</td>
<td>0.0796005</td>
<td>79.6005</td>
<td>80g</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Lettuce</td>
<td>54km</td>
<td>43.5348</td>
<td>0.0119070</td>
<td>11.907</td>
<td>12g</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Carrots</td>
<td>311km</td>
<td>250.7282</td>
<td>0.0685755</td>
<td>68.5755</td>
<td>69g</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Onions</td>
<td>782km</td>
<td>630.4484</td>
<td>0.1724310</td>
<td>172.431</td>
<td>172g</td>
<td>3.5</td>
<td></td>
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<tr>
<td><strong>Food category Totals</strong></td>
<td></td>
<td>8730km</td>
<td>7038,1260 t CO₂-e</td>
<td>1924,965 t CO₂-e</td>
<td>1925g CO₂-e</td>
<td>-38.0 Black Balloons</td>
<td></td>
</tr>
<tr>
<td><strong>Total emissions equivalent to number of cars driving for 1 year(^{28})</strong></td>
<td></td>
<td>1759 cars</td>
<td>0.48 cars</td>
<td></td>
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</tbody>
</table>

\(^{25}\) Emissions are expressed in tonnes of CO₂-e which includes CO₂ (carbon dioxide) and the global warming effect of the relatively small quantities of CH₄ (methane) and N₂O (nitrous oxide) as defined by the Australian Greenhouse Office (AGO). Factors and Methods Workbook, Department of Environmental and Heritage (December 2006).

\(^{26}\) See appendix 7 for information on this data.

\(^{27}\) Measurement in ‘Black Balloons’ refers to Sustainability Victoria’s ‘Black Balloons’ campaign where emissions are represented by balloons at 50g CO₂ per balloon. As this may not include CH₄ and N₂O (which are included in the measurement of CO₂-e as above), estimates have been used.

\(^{28}\) Emissions equivalent to emissions per car are based on 4 tonnes CO₂-e per year based on 15,000km. Source: correspondence: Mark Hunston, Australian Greenhouse Office (AGO), May 2007.

Level 5 Activity 1

CEREAL

SAVOURY BISCUITS

CHEESE

ONION

WHITE SUGAR

BANANAS

FRESH CHICKEN
# Level 5 Activity 2: Impact of the food industry

## Resources

<table>
<thead>
<tr>
<th>Crop production</th>
<th>Livestock/fish production</th>
<th>Processing</th>
<th>Packaging</th>
<th>Distribution</th>
<th>Preparation</th>
<th>Consumption</th>
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</thead>
</table>

## Product lifecycle

<table>
<thead>
<tr>
<th>Crop production</th>
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<th>Consumption</th>
</tr>
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</table>

## Environmental impact

<table>
<thead>
<tr>
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<th>Distribution</th>
<th>Preparation</th>
<th>Consumption</th>
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</thead>
</table>
## Level 5 Activity 2: Impact of the food industry

### Resources

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<thead>
<tr>
<th>Soil</th>
<th>Water</th>
<th>Pesticides</th>
<th>Herbicides</th>
<th>Fertilisers</th>
<th>Seeds</th>
<th>Agro-machinery</th>
<th>Energy Use</th>
<th>Global Land Use for Monoculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed</td>
<td>Grazing Land</td>
<td>Water</td>
<td>Energy</td>
<td>Antibiotics</td>
<td>Global Land Use for Monoculture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td>Cardboard</td>
<td>Plastics</td>
<td>Glass</td>
<td>Metals</td>
<td>Energy</td>
<td></td>
<td></td>
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<tr>
<td>Transport Fuels</td>
<td>Cold Storage</td>
<td>Refrigeration</td>
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<tr>
<td>Energy for Food</td>
<td>Cooking Equipment</td>
<td>Manufacture</td>
<td></td>
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<tr>
<td>Energy for Equipment Used in Food Preparation</td>
<td>Refrigeration</td>
<td></td>
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<tr>
<td>Energy</td>
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### Product Lifecycle

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### Environmental Impact

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</tbody>
</table>
### Level 6: We are all consumers

#### Overview

<table>
<thead>
<tr>
<th>Week</th>
<th>Learning and teaching: Lesson focus</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Topic:</strong> We are all consumers</td>
<td>Prepare two meals, one reasonably local and fresh and a similar meal that has processed ingredients. Weigh all waste; include packaging and food waste in preparation and leftovers. Discuss potential for change.</td>
</tr>
<tr>
<td></td>
<td><strong>Level 6 Activity 1:</strong> <strong>Global spending patterns</strong>&lt;sup&gt;*&lt;/sup&gt;</td>
<td><strong>Meal example</strong> Vegetable calzone, page 123 in <em>Start cooking</em> (Macmillan 2008). (Recipe included in supplementary material.)</td>
</tr>
<tr>
<td></td>
<td><strong>Tasks:</strong> Consider the points for discussion in the <em>Food for thought from UNEP and UNESCO</em> investigation about consumption patterns (page 12).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Investigate some <strong>Global consumption patterns</strong> by completing the activity sheet, ranking global spending on a range of items (page 13). (There is also an accompanying answer sheet.)</td>
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<tr>
<td></td>
<td>Introduce the <strong>Design project</strong> (see details following this table). Planning will take place for this over the next three weeks, with the planned meal prepared in week 4.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td><strong>Level 6 Activity 2:</strong> <strong>Where does our food originate?</strong>&lt;sup&gt;*&lt;/sup&gt;</td>
<td>Prepare a meal that includes canned tomatoes or lentils and rice (all imported) and other selected vegetables. Example: Vegetable Curry page 138 <em>Cookery the Australian Way</em> (7th edition). A risotto or basic paella are also suggested meals.</td>
</tr>
<tr>
<td></td>
<td>The related activity sheet (page 17) asks the teacher to select a food material on which a class investigation will be based. Some suggestions are: cheeseburger, chocolate, potato crisps, instant noodles, imported rice, pork sausages, eggs, carrot, canned local tomatoes, canned Italian tomatoes, imported mineral water. Use information from <em>Food Miles in Australia</em> to assist with research (see Level 5 Activity 1). This task includes both whole-class work and a small group component.</td>
<td></td>
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<tr>
<td></td>
<td>For all ingredients used in the practical session, investigate the distances travelled and possible food miles (kilometres). Discuss alternatives for ingredients. Compare costs in terms of money and energy used in production, packaging and transport.</td>
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<tr>
<td></td>
<td>Start planning for the <strong>Design project</strong>. Students develop a points system for judging.</td>
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</tr>
<tr>
<td>Week</td>
<td>Learning and teaching: Lesson focus</td>
<td>Production</td>
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<td>------------</td>
</tr>
<tr>
<td>3</td>
<td><strong>Level 6 Activity 3:</strong></td>
<td>Half the class prepare Risotto with vegetables (page 132 <em>Cookery the Australian Way</em> 7th edition) and the other half prepare Lamb pilaf (page 231, <em>Cookery the Australian Way</em> 7th edition). Compare the energy costs of each meal. Note the impact of meat consumption.</td>
</tr>
<tr>
<td></td>
<td><strong>What is sustainable consumption?: Product lifecycle</strong>*</td>
<td>Continue <em>Design project</em> planning</td>
</tr>
<tr>
<td></td>
<td><strong>Task:</strong> Using the provided activity sheet (page 18), teachers introduce students to the UNESCO guidelines on defining sustainable consumption. Students then consider a range of questions on food production, transport, retailing, use and disposal.</td>
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<tr>
<td>4</td>
<td><strong>Level 6 Activity 4:</strong></td>
<td>Prepare meal planned in the design project and judge the most sustainable meal according to the established criteria.</td>
</tr>
<tr>
<td></td>
<td><strong>What is my impact??</strong></td>
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<tr>
<td></td>
<td><strong>Task:</strong> Using the provided questionnaire sheet (page 20), students replicate some of the research carried out by UNESCO and UNEP in <em>Youth, sustainable consumption patterns and lifestyles</em></td>
<td></td>
</tr>
</tbody>
</table>

* See supplementary support material for this activity following this table

**Design project**

Design and prepare a main meal that will have minimal impact on the environment, including waste. All aspects of the food used in the meal, from paddock to plate, are investigated. The final meal is scored based on points awarded/deducted for all ingredients in the meal.

Students develop the scoring system allocating points for the following features:
- food source and energy use
- level of processing of selected food
- closeness to traditional growth season
- packaging of ingredients
- waste in meal production
- meat used
- organic ingredients

An example of how this may work for food source and energy use (above):
- within 100 miles = + 15 points
- interstate (NSW and SA) = minus 5 points
- interstate (Queensland, WA and NT) = minus 10 points
- overseas = minus 15 points

The CERES research on food miles (see Level 5 Activity 1) will assist students to in gain knowledge of the full impact of food miles.
Level 6 Activity 1: Food for thought from UNEP and UNESCO Investigation

UNEP = United Nations Environmental Program

UNESCO = United Nations Educational, Scientific and Cultural Organisation

Food for thought
According to a report from these two organisations:

• in industrialised countries, dustbins are almost 75 per cent filled with food packaging
• 1.5 million litres of water are needed to produce 300,000 litres of carbonated soft drink
• Buying imported bottle water has reached its highest ever levels in developed countries. The environmental impact costs are extensive.
• 25 to 35 kilograms of cereals (as feed for livestock) is needed to produce 1 kilogram of red meat
• 25 per cent of food is thrown away without being eaten

Tasks
1. For each of the above points discuss/debate:
   • What are some government strategies/systems used to change this?
   • What additional government strategies/systems could be introduced to change this?
   • What behaviours (among individuals, families and communities) are needed to change this?

2. Consider the following topics. Your response could be in the form of a presentation or essay:
   a) Do you think that governments in Australia are serious about the environment? Gather some evidence to support your point of view. Your response should be focused on (but need not be limited to) the food supply.
   b) Do you think the community should be encouraged through ‘the hip-pocket nerve’ to take the environment seriously? Discuss how the prices of goods and services could be regulated to reflect their environmental impact. Would you support this? Your response should be focused on (but need not be limited to) the food supply.

What can I do?
• Select shorter distribution circuits e.g. local traders over supermarkets (this can also help to reduce packaging).
• Buy produce in season.
• Choose produce with the least packaging.
• Buy no more than is needed (check when purchasing specials in bulk quantities; will it all be used? If not, is it a ‘special?’).
• Study labels and check the product’s origin.
• Become an informed consumer:
  • Consider the product’s lifecycle
  • Investigate requirements to grow different vegetables e.g. resource use, time from seed or seedling to production.
  • Investigate farming, fishing and livestock production.
### Level 6 Activity 1: Global consumption patterns

1. Rank the following categories of global spending from 1 to 13 in terms of annual expenditure. One will be the category with the most money spent on it around the world each year, and 13 will be the category with the least spent on it annually.

2. Try to estimate how many billions of dollars are spent on each category each year. The highest spending is $880 billion per year, the lowest $7 billion per year.

   It may be easier to cut the list up and enable pairs or groups to work together to reach a solution.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Icecream in Europe</td>
</tr>
<tr>
<td>2</td>
<td>Business entertainment in Japan</td>
</tr>
<tr>
<td>3</td>
<td>Reproductive health for all women</td>
</tr>
<tr>
<td>4</td>
<td>Perfumes in Europe and the USA</td>
</tr>
<tr>
<td>5</td>
<td>Cosmetics in the USA</td>
</tr>
<tr>
<td>6</td>
<td>Narcotic drugs in the world</td>
</tr>
<tr>
<td>7</td>
<td>Basic education around the world</td>
</tr>
<tr>
<td>8</td>
<td>Cigarettes in Europe</td>
</tr>
<tr>
<td>9</td>
<td>Water and sanitation for all</td>
</tr>
<tr>
<td>10</td>
<td>Military spending in the world</td>
</tr>
<tr>
<td>11</td>
<td>Pet foods in Europe and USA</td>
</tr>
<tr>
<td>12</td>
<td>Alcoholic drinks in Europe</td>
</tr>
<tr>
<td>13</td>
<td>Basic health and nutrition</td>
</tr>
</tbody>
</table>
**Level 6 Activity 1:**

**Global consumption patterns**

Rank order of annual expenditure (AUD $billion)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Expenditure (AUD $billion)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>880</td>
<td>Military spending in the world</td>
<td>880</td>
</tr>
<tr>
<td>450</td>
<td>Narcotic drugs in the world</td>
<td>450</td>
</tr>
<tr>
<td>118</td>
<td>Alcoholic drinks in Europe</td>
<td>118</td>
</tr>
<tr>
<td>56</td>
<td>Cigarettes in Europe</td>
<td>56</td>
</tr>
<tr>
<td>39</td>
<td>Business entertainment in Japan</td>
<td>39</td>
</tr>
<tr>
<td>19</td>
<td>Pet foods in Europe and USA</td>
<td>19</td>
</tr>
<tr>
<td>15</td>
<td>Basic health and nutrition</td>
<td>15</td>
</tr>
<tr>
<td>14</td>
<td>Perfumes in Europe and the USA</td>
<td>14</td>
</tr>
<tr>
<td>14</td>
<td>Reproductive health for all women</td>
<td>14</td>
</tr>
<tr>
<td>12</td>
<td>Icecream in Europe</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>Water and sanitation for all</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Cosmetics in the USA</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Basic education around the world</td>
<td>7</td>
</tr>
</tbody>
</table>

*Source: UNESCO*

www.unesco.org/education/tlsf/TLSF/theme_b/mod09/uncom09t02bod.htm

*Note:* The UNESCO resource quotes US dollars, which have here been converted to Australian dollars (December 2007).
These calzones are like pasties but are made with a yeast dough rather than pastry to reduce the fat content. Traditional pasties, from Cornwall in England, are filled with mainly root and tuber vegetables, such as potatoes and turnips; a sweet version is filled with apples. The vegetables in calzones can vary and meat can also be added.

**Vegetable calzones**

**INGREDIENTS**

- 60 grams pumpkin, diced
- 1 tablespoon tomato sauce
- 1 tablespoon chopped parsley
- ¼ teaspoon salt
- 2 teaspoons Worcestershire sauce
- pepper, to taste
- butter or oil spray, for greasing
- 1 egg mixed with 2 tablespoons milk, for glaze

**Step by Step**

1. Make the [basic yeast dough](#) using the recipe on page 51.
2. Gently heat the oil in a medium saucepan and sauté the onion until translucent.
3. Add all the vegetables and gently cook for 5 minutes, stirring occasionally. The vegetables only need to be partly cooked as they will finish cooking in the oven.
4. Tip the vegetables into a large bowl to cool.
5. Add the tomato sauce, parsley, salt, Worcestershire sauce and pepper to the vegetables and mix them together.

**Assembly**

1. Preheat the oven to 180°C.
2. Knead the dough. Divide the dough into 4 portions (or more for smaller calzones) and shape each into a ball. On a lightly floured surface, roll out the dough with a rolling pin until it is about 5 mm thick. You can use a saucer to get the rounds even.
3. Spoon some of the filling onto one half of the dough. Brush the edge of the dough with water, using a pastry brush.
4. Fold the dough lip over the filling and crimp the dough edges together to seal and to form neat parcels.
5. Transfer the calzones onto a lightly greased baking tray and brush them with an egg and milk glaze. Do not splash the glaze onto the tray.
6. Make a small slit in the top of the calzones to allow the steam to escape.
7. Bake for 20–25 minutes, or until crisp and golden brown.
### Basic yeast dough

200 mL warm water  
½ teaspoon sugar  
2 teaspoons (1 sachet) dried yeast  
2 cups (250 grams) unbleached plain flour  
½ teaspoon salt  
1 teaspoon olive oil

---

1. Combine the warm water, sugar and dried yeast in a mixing bowl. Stir with a wooden spoon and stand it in a **warm place** until the mixture is frothy (10–15 minutes). This is the yeast mixture.

2. Combine the plain flour and salt in a warm mixing bowl. This is the flour mixture.

3. Combine the yeast mixture and the flour mixture using a wooden spoon or metal spatula. Mix until the dough forms a ball. Don’t be afraid to use your (clean) hands for the final stages of mixing.

4. Transfer the dough to a lightly floured surface and **knead** for 5 minutes, until it has a smooth texture.

5. Place the dough in a well-oiled bowl (use a pastry brush to coat the inside of the bowl with oil). Turn the dough in the bowl to coat it with oil. Cover the bowl with cling wrap and stand it in a warm place for about 30 minutes.

---

**warm place:** in baking terms, this is a place between about 21°C and 37°C. If it is a cool day you may need to sit it next to an oven that is switched on, near a sunny window or heater (but not too close), or in any other warm place.

**knead:** to push and pull the dough against a lightly floured surface, usually a bench, using the heels, or base, of your hands. You should squash the dough into the bench, lift it, turn it 90° and repeat the process until the dough is smooth and elastic. This is quite hard work, so you will need to use your muscles! You will feel the dough getting smoother and more elastic as you do this.
Level 6 Activity 2:
Where does our food originate?

Introduction
For the first human beings on earth food consisted of what was growing on the land naturally as well as birds, animals and fish that could be caught. In this activity students investigate the point of origin of food and the process of preparation for consumption.

Materials
• a cheeseburger and a cola (or other foods) purchased from a local fast food chain
• a map of the world
• access to information on:
  • primary production
  • key areas of secondary production of food in Australia
  • sources of ingredients for fast food (in the class, school library, online or at home).

Note: Large fast food companies have information about ingredient origins for most food. Food Miles in Australia (Gaballa and Abraham 2007) has considerable detail for possible ingredients such as beef, eggs, cheese, lettuce, tomato, margarine, chocolate, potato crisps.

Procedures
• Place the food items on your desk. When the class has begun, take each item out of its packaging. Ask students if they have ever consumed these foods. Assess frequency.
• Brainstorm or examine the food products.
• Ask students to list the components or ingredients that go into making the selected foods. List these ingredients (individually or as a class on the board).
• Ask students to identify the geographic area of origin of each ingredient. Most students will have no idea, but encourage students to make guesses or use suggested resources to investigate.
• Assign groups of 3 or 4 students to find out when and where each product originated. If you have resources in the classroom, this can be an in-class activity. If not, request that students go to the library to seek answers or use the Internet if they have access. Please note that not all products have a single point of origin (such as salt). For some foods, their points of origin are unknown.
• After students have conducted their research, have them report on their findings on the following worksheet. Discuss differences where appropriate.
Level 6 Activity 2:
Where does our food originate?

<table>
<thead>
<tr>
<th>Food or ingredient</th>
<th>Point of origin</th>
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<tbody>
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</tbody>
</table>
Level 6 Activity 3:
What is sustainable consumption?

UNESCO refers to five common features of sustainable consumption that appear in most definitions (www.unesco.org/education):

- Taking a lifecycle perspective in consumer decisionmaking.
- Acting with concern for future generations.
- Minimising resource use, waste and pollution.
- Satisfying basic human needs (not the desire for ‘wants’ and luxuries).
- Favouring quality of life over material standards of living.

This activity requires students to think critically about the lifecycle of food products and the consequential impact on the environment.

Refer to the table **Impact of the food industry** (see Level 5 Activity 2, page 9) that indicates some of the many steps in a product lifecycle. The following questions refer to production, transport and retailing, use and disposal. Other questions can be added.

**Thinking critically (and ethically) about the lifecycle of consumer products**

**Production**

- What is the country of a) production of the raw materials and b) manufacture?
- What laws does the country of origin have regarding the use of pesticides, safety regulations for workers, wages, and conditions for workers? (Buying locally gives you more knowledge to be able to answer these questions.)
- What is the brand name? Has the company a good or bad record internationally?
- How much energy has been used to manufacture the product or its container?
- What chemicals and processes are used in the manufacturing or growing of the product or its container that could damage the workers or the environment?
- Are timber products from native rainforest?
- If the product is from animals are they well cared for?
- Have animals been used in the testing of the product?

**Transport and retailing**

- How much fuel has been used to transport the product to the retail outlet?
- Can you take your own bags and containers with you and buy in bulk rather than pre-packaged?
- Does your retail outlet have a good employment policy for its workers?
- How far do you travel to your retail outlet?

**Use**

- If the product goes into the drainage system will it eventually harm the waterways?
- Is the product an energy-efficient one?
- Is the product harmful to you or your family’s health?

**Disposal**

- Is the product over-packaged?
- Is the product or packaging able to be re-used, composted, recycled?
- Will the packaging be harmful to animals or the environment if left lying around?

*Source: www.unesco.org/education/tlsf/TLSF/theme_b/mod09/uncom09t06s03.htm*
Level 6 Activity 4: What is my impact?

As consumers all of our individual actions have an environmental impact. Personal identity is established by our consumer patterns and this is significant for young people.

Impact of personal consumerism on sustainability

Complete the following questionnaire. For each question refer to the same examples given by each alternative in the first question. Tick the most relevant.

The way I travel (in and out of town) affects:
- environment (pollution, noise, quality of water)
- society (employment, work conditions, child labour)
- economy (what companies produce and how, economic growth)
- all of these
- none of these.

The clothes I buy affect:
- environment
- society
- economy
- all of these
- none of these.

The way I dispose of my waste affects:
- environment
- society
- economy
- all of these
- none of these.

The food I buy affects:
- environment
- society
- economy
- all of these
- none of these.

Collect the data for the class and discuss the outcomes. In an international study of youth in 24 countries young consumers show an understanding of the environmental impact of use of products and disposal of products, but considerably less of production and shopping behaviours, the first two phases of the consumption process. They acknowledge an environmental impact of their buying, but considerably less so in relation to clothes and food. Issues such as travel patterns, waste disposal, use of water and use of energy were recognised as important.

Compare the results to those collected in the international study. For example, in Argentina and Italy only 11 per cent and 10 per cent respectively see their purchase of food as having an impact on the environment. The figures for clothing are considerably lower with only 8 per cent (Argentina) and 1 per cent (Italy) believing their clothing choices affect the environment.

An average of 52 per cent for Argentina and 85 per cent for Italy believe the way they dispose of their waste affects the environment. In Argentina 72 per cent and Italy 60 per cent believe the way they travel affects the environment.

The Australian Sustainable Schools Initiative (AuSSI) is a partnership with the Australian Government, states and territories that supports schools in working towards a sustainable future. In Victoria the Department of Education and CERES Community Environment Park administer the program.

Schools joining the program develop a holistic approach to sustainability while working towards a five-star accreditation in the modules of Core, Water, Waste, Energy and Biodiversity. Visit the website for further information about the program and to read more about schools and their journeys towards sustainability: www.environment.gov.au/education/aussi/index.html

Resources


CERES Community Environment Park
www.ceres.org.au also
www.sustainability.ceres.org.au

Department of Sustainability and the Environment
www.dse.vic.gov.au


Go Grains teaching activity on seeds and lentils
www.gograins.grdc.com.au

Landlearn: A statewide education program supporting environmental education in Victorian schools. www.landlearn.net.au
(> Click on Curriculum activities)

Melbourne Market Authority
www.marketfresh.com.au

Packaging Council of Victoria
www.packcoun.com.au

Supermarkets online
www.colesonline.com.au
www.greengrocer.com.au
www.woolworths.com.au

United Nations
www.unesco.org/education.tlsf

United Nations Environment Program
www.unep.org

Victorian Essential Learning Standards section focused on sustainability
Linking sustainability to Victorian Essential Learning Standards

The table below provides examples of standards across the domains that support and demonstrate the multidisciplinary nature of sustainability education.

A number of domains have standards that, although not specific to sustainability education, may be applied to the teaching of sustainability particularly in relation to local and global issues. Domains such as Information and Communications Technology and Communications have not been included, but may be appropriate in individual school settings.

The table below provides examples of elements of the Level 5 and 6 VEL Standards which may be used in developing and assessing units of work related to sustainability in home economics:

The below material is an extract from material produced by the Victorian Curriculum and Assessment Authority, Australia. Students and teachers should consult the Victorian Essential Learning Standards website for more information. This material is copyright and cannot be reproduced in any form without the written permission of the VCAA. For more information visit http://vels.vCAA.vic.edu.au.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Dimension</th>
<th>Element of the Level 5 standards</th>
<th>Element of the Level 6 standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and Physical Education</td>
<td>Health knowledge and promotion</td>
<td>... analyse a range of influences on personal and family food selection, and identify major nutritional needs for growth and activity...&lt;br&gt;... describe the effect of family and community expectations on the development of personal identity and values.</td>
<td>... identify and describe a range of social and cultural factors that influence the development of personal identity and values.&lt;br&gt;... analyse the positive and negative health outcomes of a range of personal behaviours and community actions.&lt;br&gt;... identify and describe strategies that address current trends in the nutritional status of Australians.&lt;br&gt;... analyse and evaluate the factors that affect food consumption in Australia.</td>
</tr>
<tr>
<td>Civics and Citizenship</td>
<td>Civic knowledge and understanding</td>
<td>... identify significant developments ... in the governance and achievement of political rights in Australia.&lt;br&gt;... describe the purposes of laws and the processes of creating and changing them.&lt;br&gt;... identify and question the features and values of Australia's political and legal systems.</td>
<td>... explain how citizens influence government policy through participation in political parties, elections and membership of interest groups.&lt;br&gt;... take a global perspective when analysing an issue, and describe the role of global organisations in responding to international issues.</td>
</tr>
<tr>
<td>Domain</td>
<td>Dimension</td>
<td>Element of the Level 5 standards</td>
<td>Element of the Level 6 standards</td>
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</tr>
<tr>
<td><strong>Community engagement</strong></td>
<td></td>
<td>... explain the different perspectives on contemporary issues and propose solutions to problems and events.</td>
<td>... draw on a range of resources, including the mass media, to articulate and defend their own opinions about political, social and environmental issues in national and global contexts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... use democratic processes when working in groups on class and community projects.</td>
<td>... contest, where appropriate, the opinions of others.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... participate in activities to contribute to environmental sustainability or action on other community issues.</td>
<td>... develop an action plan which demonstrates their knowledge of a social or environmental issue and suggest strategies to raise community awareness of it.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>... participate in a range of citizenship activities including those with a national or global perspective, at school and in the local community.</td>
</tr>
<tr>
<td><strong>Interpersonal Development</strong></td>
<td>Working in teams</td>
<td>... accept responsibility as a team member and support other members to share information, explore the ideas of others, and work cooperatively to achieve a shared purpose ...</td>
<td>... work collaboratively, negotiate roles and delegate tasks to complete complex tasks in teams.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... work effectively in different teams and take on a variety of roles to complete tasks of varying length and complexity.</td>
<td>... achieve agreed goals within set timeframes.</td>
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<tr>
<td></td>
<td></td>
<td>... explain the benefits of working in a team.</td>
<td>... describe how they respect and build on the ideas and opinions of team members and clearly articulate or record their reflections on the effectiveness of learning in a team.</td>
</tr>
<tr>
<td><strong>Personal Learning</strong></td>
<td>The individual learner</td>
<td>... demonstrate an awareness of different cultural and societal beliefs, values and practices, identifying and discussing the effect of ethical issues on learning and working with others.</td>
<td>... identify the ethical frameworks that underpin their own and others’ beliefs and values and describe how the conflicts and dilemmas they identify may affect learning.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... demonstrate, through their interactions in social situations, respect for a diverse range of people and groups.</td>
<td>... determine the factors that contribute to the creation of positive learning environments and establish, follow and monitor protocols for a variety of learning situations.</td>
</tr>
</tbody>
</table>

*Source: Victorian Curriculum and Assessment Authority, http://vels.vcaa.vic.edu.au*
<table>
<thead>
<tr>
<th>Domain</th>
<th>Dimension</th>
<th>Element of the Level 5 standards</th>
<th>Element of the Level 6 standards</th>
</tr>
</thead>
</table>
| The Humanities – Economics | Economic knowledge and understanding | ... explain the nature of the economic problem and how economic choices involve trade-offs that have both immediate and future consequences.  
... explain key factors that influence the Australian economy, including the quantity and quality of factors involved in production, resource use, ownership and management, and types of businesses.  
... identify and describe ways the government influences economic outcomes at the personal, local and national level.  
... informed economic and consumer decisions, demonstrating the development of personal financial literacy. | ... describe how markets, government policies, enterprise and innovation affect the economy, society and environment in terms of employment, economic growth, the use of resources, exports and imports, and ecological sustainability.  
... analyse how goods and services are produced and how markets work.  
... predict how prices will change when there is either a surplus or shortage, and explain how this might influence the behaviour of consumers and producers.  
... analyse the role and significance of exchange, trade and globalisation in influencing Australia's standard of living.  
... discuss and explain what it means to be an ethical consumer and producer and identify examples of ways values can affect the economic decision making of consumers, producers and governments.  
... interpret reports about current economic conditions, both national and global, and explain how these conditions can influence decisions made by consumers, producers and government policymakers.  
... demonstrate an awareness of the impact of values and beliefs on economic issues, and how differences may be identified, negotiated, explained and possibly resolved. |
<p>| Economic reasoning and interpretation | ... form and express opinions on economic issues that interest and/or impact on them personally, or locally and/or nationally. |  |  |</p>
<table>
<thead>
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<th>Element of the Level 6 standards</th>
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</thead>
<tbody>
<tr>
<td>The Humanities —</td>
<td>Geographical knowledge and understanding</td>
<td>... explain, using examples, how the interaction of physical processes and human activities create variations within the regions (Australia, Asia, the Pacific and Antarctica).&lt;br&gt;... describe differences in culture, living conditions and outlook, including attitudes to environmental issues, in the regions (Australia, Asia, the Pacific and Antarctica).&lt;br&gt;... demonstrate understanding of environmental issues based on inquiry and propose ways of ensuring the sustainability of resources.</td>
<td>... analyse development issues and formulate and evaluate comprehensive policies, including those for sustainable use and management of resources, to alter development patterns at a range of scales.</td>
</tr>
<tr>
<td>Geography</td>
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</tr>
<tr>
<td>Science</td>
<td>Science at work</td>
<td>... analyse a range of science-related local issues and describe the relevance of science to their own and other people’s lives.&lt;br&gt;... explain how sustainable practices have been developed and/or are applied in their local environment.</td>
<td>... use the relevant science concepts and relationships as one dimension of debating contentious and/or ethically based science-related issues of broad community concern.&lt;br&gt;... demonstrate an awareness of the ways in which scientific vocabulary is used incorrectly in the mass media, distinguishing between the intended meaning of such terms and their meaning in non-scientific contexts.&lt;br&gt;... provide two examples of the work of scientists that demonstrate different approaches to developing scientific knowledge or solving a scientific problem.</td>
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</tbody>
</table>
| Design, Creativity and Technology | Investigating and designing      | ... think flexibly and use various sources of information to investigate and research a range of factors relevant to design briefs.  
... clarify their ideas by gathering and providing feedback and develop evaluation criteria from the design brief to inform their judgments during the design process.  
... use a variety of drawing and modelling techniques to visualise design ideas and concepts, and demonstrate understanding of design elements and principles.  
... understand and logically sequence major stages of production, and can list materials and quantities needed for production.  
... communicate their ideas using a variety of media.                                                                 | ... identify considerations and constraints within a design brief.                                                                 |
<p>|                               |                                  | ... undertake research relevant to the design brief.                                                                                                         | ... locate and use relevant information to help their design thinking and identify the needs of a variety of client/user groups. When designing, they generate a range of alternative possibilities, use appropriate technical language, and justify their preferred option, explaining how it provides a solution to the problem, need or opportunity.                                                                 |
|                               |                                  | ... make critical decisions on materials/ingredients, systems components and techniques based on their understanding of the properties and characteristics of materials/ingredients and/or of the relationship between inputs, processes and outputs.                                                                 | ... effectively use information and communications technology equipment, techniques and procedures to support the development of their design and planning. Students take account of function and performance, energy requirements, aesthetics, costs, and ethical and legal considerations that address the requirements of design briefs.                                                                 |
|                               |                                  | ... identify a range of criteria for evaluating their products and/or technological systems. Students plan a realistic and logical sequence of the production stages, incorporating time, cost and resources needed for production.                                                                 |                                                                                                |</p>
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<tr>
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<th>Dimension</th>
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<th>Element of the Level 6 standards</th>
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<tbody>
<tr>
<td>Producing</td>
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<td>... work safely with a range of tools and equipment (some of which are complex) ...</td>
<td>... implement a range of production processes accurately, consistently, safely/hygienically and responsibly, and select and use personal protective clothing and equipment when necessary.</td>
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<td></td>
<td>Manage materials, ingredients and processes, to produce products, taking full account of the appropriateness of their characteristics in meeting requirements of design briefs.</td>
<td>... produce products/systems using complex tools, equipment, machines, materials/ingredients and/or systems components with precision.</td>
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<td>... make modifications during production, demonstrating reflection, research, responsiveness to feedback, and use of evaluation criteria.</td>
<td>... clearly explain decisions about the suitability of materials/ingredients, systems components, energy requirements and production techniques based on their understanding of the properties and characteristics of materials/ingredients, and the inputs, processes and outputs of systems.</td>
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<td></td>
<td></td>
<td>... adapt their methods of production and provide a sound explanation for deviation from the design proposal.</td>
<td>... make products that meet the quality, aesthetic, functionality and performance requirements outlined in the design brief.</td>
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<td>Domain</td>
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<td>Element of the Level 6 standards</td>
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<td>Analysing and evaluating</td>
<td>... adapt their methods of production to accommodate changing circumstances, providing a sound explanation for any deviance from the design proposal.</td>
<td>... use evaluation criteria they have previously developed, and critically analyse processes, materials/ingredients, systems components and equipment used, and make appropriate suggestions for changes to these that would lead to an improved outcome.</td>
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<td>... select appropriate techniques to test and evaluate their product’s performance, and modify their products (and make recommendations to others for improvement) in light of evaluation to improve their performance, function and appearance.</td>
<td>... use a range of suitable safe testing methods in this analysis.</td>
</tr>
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<td>... recommend improvements to the function and appearance of others’ product.</td>
<td>... relate their findings to the purpose for which the product and/or system was designed and the appropriate and ethical use of resources.</td>
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<td></td>
<td></td>
<td>... analyse and describe the social and environmental impacts of their own and others’ designs and products.</td>
<td>... synthesise data, analyse trends and draw conclusions about the social, cultural, legal and environmental impacts of their own and others’ designs and the products/systems, and evaluate innovative new technology in the manufacturing industry.</td>
</tr>
<tr>
<td>Thinking Processes</td>
<td>Reasoning, processing and inquiry</td>
<td>... use a range of question types, and locate and select relevant information from varied sources when undertaking investigations.</td>
<td>... discriminate in the way they use a variety of sources.</td>
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<td></td>
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<td>... use a range of appropriate strategies of reasoning and analysis to evaluate evidence and consider their own and others’ points of view.</td>
<td>... generate questions that explore perspectives.</td>
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<td>... use a range of discipline based methodologies.</td>
<td>... process and synthesise complex information and complete activities focusing on problem solving and decision making which involve a wide range and complexity of variables and solutions.</td>
</tr>
<tr>
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<td>... complete activities focusing on problem solving and decision making which involve an increasing number of variables and solutions.</td>
<td>... employ appropriate methodologies for creating and verifying knowledge in different disciplines.</td>
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<td>... make informed decisions based on their analysis of various perspectives and, sometimes contradictory, information.</td>
</tr>
<tr>
<td>Domain</td>
<td>Dimension</td>
<td>Element of the Level 5 standards</td>
<td>Element of the Level 6 standards</td>
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</tbody>
</table>
|                                      | Creativity                         | ... apply creative thinking strategies to explore possibilities and generate multiple options, problem definitions and solutions.  
... demonstrate creativity, in the ways they engage with and explore ideas in a range of contexts.                                                                                                                                                                                                                          | ... experiment with innovative possibilities within the parameters of a task.  
... take calculated risks when defining tasks and generating solutions.  
... apply selectively a range of creative thinking strategies to broaden their knowledge and engage with contentious, ambiguous, novel and complex ideas.                                                                                                |
|                                      | Reflection, evaluation and metacognition | ... use specific language to describe their thinking and reflect on their thinking processes during their investigations.  
... modify and evaluate their thinking strategies.  
... describe and explain changes that may occur in their ideas and beliefs over time.                                                                                                                                                                                                                         | ... when reviewing information and refining ideas and beliefs, students explain conscious changes that may occur in their own and others’ thinking and analyse alternative perspectives and perceptions.                                                                                                  |

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