

Australian Curriculum links to the topic of Waste Management

Source Document: <https://www.qcaa.qld.edu.au/p-10/aciq/learning-areas/science/australian-curriculum>

The topic of Waste Management encompasses such things as:

Materials; natural/ virgin/ finite resources, upcycling, resource recovery, paper/plastic/aluminium/steel/glass, waste organics (food or garden)

Economics; circular economy, commodity market value and contamination of recycled materials, local/national and international supply chains for recycled materials, container refund scheme

Environment; greenhouse gas, environmental impacts - microplastics, environmental management – monitoring and engineered design for dust, gas, surface and ground water leachate, asbestos, Permaculture (compost, mulch, chickens, worms)

Technology; landfill gas for energy, alternative waste technologies, anaerobic digestion, piggyback landfill

Society; industry careers, zero-waste community, consumerism, sustainability

The following learning areas were identified as having links to the topic of waste management within the disciplinary knowledge, skills and understanding.

P-10 Learning area: **Science**

Year 4:

- In Year 4, students broaden their understanding of classification and form and function through an exploration of the properties of natural and processed materials.
- ...living things form part of systems. They understand that some systems change in predictable ways, such as through cycles. They apply their knowledge to make predictions based on interactions within systems, including those involving the actions of humans.

Year 5:

- Students are introduced to cause and effect relationships through an exploration of adaptations of living things and how this links to form and function.

Year 6:

- They develop a view of Earth as a dynamic system, in which changes in one aspect of the system impact on other aspects

Year 7:

- They use and develop models such as food chains, food webs and the water cycle to represent and analyse the flow of energy and matter through ecosystems and explore the impact of changing components within these systems.
- They explore the notion of renewable and non-renewable resources and consider how this classification depends on the timescale considered.

P-10 Learning area: Humanities and Social Science

Subject: Humanities and Social Science

Year 4:

- Examining how people's need and want of resources over time has affected people, societies and environments.
- They examine the concept of sustainability, and its application to resource use and waste management, past and present, by different groups. The curriculum introduces the role of local government, laws and rules, and group belonging and how they meet people's needs. Themes of law and citizenship extend into their studies of diverse groups, and how environmental sustainability is enacted.

Inquiry Question:

- What is the significance of the environment and what are different views on how it can be used and sustained, past and present?

Year 5:

- In studying human desire and need for resources, students make connections to economics and business concepts around decisions and choices, gaining opportunities to consider their own and others' financial, economic, environmental and social responsibilities and decision-making, past, present and future.

Inquiry Question:

- What is the relationship between environments and my roles as a consumer and citizen?

Year 6:

- Students investigate the importance of rights and responsibilities and informed decision-making, at the personal level of consumption and civic participation, and at the national level through studies of economic, ecological and government processes and systems.

Inquiry question:

- How has Australia developed as a society with global connections, and what is my role as a global citizen?

Year 7:

- Students investigate the nature of water as a natural resource in different global places and times, and the effects, issues and solutions of its use, management and value by different people, past and present.

Inquiry question:

- How has the use, management and value of finite natural resources affected how people have lived and societies have evolved in the past and present, and what does this mean for future planning?

Subject: Geography

Year 7: 'Place and liveability'

- The idea that places provide us with the services and facilities needed to support and enhance our lives, and that spaces are planned and managed by people.
- Students' ability to evaluate the liveability of their own place and to investigate whether it can be improved through planning.

Inquiry questions:

- What effect does the uneven distribution of resources and services have on the lives of people?
- What approaches can be used to improve the availability of resources and access to services?

Year 8: 'Changing nations'

- Examines issues related to the management and future of Australia's urban areas.

Subject: Economics and Business

Year 7:

- Exploring what it means to be a consumer, a worker and a producer in the market, and the relationships between these groups.
- ...personal, community, national or regional issues or events, with opportunities for concepts to also be considered in the global context where appropriate.

Year 9:

- Students are introduced to the concept of an 'economy' and explore what it means for Australia to be part of the Asia region and the global economy.
- ...including the implications of decisions made by individuals, businesses and governments.

Inquiry questions:

- How do participants in the global economy interact?
- What strategies can be used to manage financial risks and rewards?

P-10 Learning Area: **Technologies**

Subject: Design and Technologies

Years 3 – 10:

- Students should have opportunities to experience designing and producing products, services and environments.
- ...taking into account; ...social values; economic, environmental and social sustainability factors...

Years 3 & 4:

- Students examine social and environmental sustainability implications of existing products and processes to raise awareness of their place in the world.
- They become aware of the role of those working in design and technologies occupations and how they think about the way a product might change in the future.

Years 5 & 6:

- Students critically examine technologies – materials, systems, components, tools and equipment – that are used regularly in the home ... with consideration of ... environmental sustainability factors.
- Students represent objects and ideas in a variety of forms such as thumbnail sketches, models, drawings, diagrams and storyboards to illustrate the development of designed solutions.

Years 7 & 8:

- Produce sustainable designed solutions to problems for individuals and the community, considering ... economic, environmental and social sustainability factors.

P – 10 Learning Area: **The Arts**

Subject: Visual Arts

Years 7 & 8:

- Consider the qualities and sustainable properties of materials, techniques, technologies and processes and combine these to create and produce solutions to their artworks.
- Consider society and ethics, and economic, environmental and social factors.
- Choose to use sustainable materials, techniques and technologies

Years 9 & 10:

- Choose to use sustainable materials, techniques and technologies

Australian Curriculum links to a waste audit

The following learning areas were identified as having links to the process of auditing waste within the disciplinary knowledge, skills and understanding.

p-10 Learning Area: **Science**

Inquiry skills:

'Questioning and predicting'

Year 4: With guidance, identify questions in familiar contexts that can be investigated scientifically and make predictions based on prior knowledge.

'Planning and conducting'

Year 4: With guidance, plan and conduct scientific investigations to find answers to questions, considering the safe use of appropriate materials and equipment.

Consider the elements of fair tests and use formal measurements and digital technologies as appropriate, to make and record observations accurately.

'Processing and analysing data and information'

Year 4: Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends.

Compare results with predictions, suggesting possible reasons for findings.

'Evaluating'

Year 5 & 6: Reflect on and suggest improvements to scientific investigations

P – 10 Learning Area: **Mathematics**

'Understanding'

Year 4: extending place value to decimals

Year 5: comparing and ordering fractions

Year 6: making reasonable estimations

'Fluency'

Year 4:

- using instruments to measure accurately
- collecting and recording data

Year 5: using estimation to check the reasonableness of answers to calculations

Year 6: converting between fractions and decimals

Year 8: evaluating volumes of three-dimensional objects

'Problem-solving'

Year 4: formulating, modelling and recording authentic situations involving operations, comparing large numbers with each other, comparing time durations

Year 5: includes formulating and solving authentic problems

Year 6: formulating and solving authentic problems using fractions, decimals, percentages and measurements

Year 7: formulating and solving authentic problems using numbers and measurements

Year 10: calculating the surface area and volume of a diverse range of prisms to solve practical problems

'Reasoning'

Year 4: communicating information using graphical displays

Year 5: posing appropriate questions for data investigations and interpreting data sets.

Year 10: interpreting and comparing data sets.