



All Bottled Up: Object Analysis

YEAR 5-9
DESIGN AND TECHNOLOGIES



QGC

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Future Makers

Future Makers is an innovative partnership between Queensland Museum Network and Shell's QGC business aiming to increase awareness and understanding of the value of science, technology, engineering and maths (STEM) education and skills in Queensland.

This partnership aims to engage and inspire people with the wonder of science, and increase the participation and performance of students in STEM-related subjects and careers — creating a highly capable workforce for the future.

Image credit: Crate of Kirk's soft drink bottles. © QM, Gary Cranitch.

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EXPLORE

All Bottled Up: Object Analysis

Teacher Resource

We use plastics every day, from working on a computer or driving in a car to eating our lunch. While natural polymers have been used for hundreds of years, the first synthetic plastic was Bakelite, developed in 1907. Before the invention of plastics, the only materials that could be moulded and shaped were potteries and glass and some natural substances like tree gums and rubber. Rubber wasn't very useful for storage because it eventually lost its ability to bounce back into shape and became sticky when heated.

This activity is designed to explore and build on students' prior knowledge of materials, and examine the importance and proliferation of plastics. Object-based learning is 'a mode of education which involves the active integration of authentic or replica material objects into the learning environment'¹ and is used to prompt investigation and promote student inquiry.

In this activity, students observe and compare a glass/ceramic bottle and a plastic bottle. They will identify features and explore advantages and disadvantages of the materials to identify why plastics have become such an integral part of human society. Students may want use a magnifying glass to scan for finer details.

You may wish to ask students to work through the object analysis table or use object analysis prompt cards. This activity can lead into the *Plastic Planet: Community of Inquiry*.

Students may wish to use objects from Queensland Museum's collection to complete this object analysis. These can be viewed at [Queensland Museum Learning Resources](#) (search 'bottle' and select 'image' and 'collection item' in more search options). See recommendations below:

- [WM Shambrook Ginger Beer Bottle](#)
- [Glass Lamonts Drink Bottle](#)
- [Glass Kirks Drink Bottle](#)

Additionally, Queensland Museum has many loan kits that highlight how life in Queensland has changed over the last 150 years. Many of these kits showcase what life was like before plastics. The [Sustainable Living](#) kit allows students to investigate common domestic items from the early 1900s and compare materials, waste and energy usage to the present. You may wish to learn more about how life has changed in the last 150 years by visiting any of the [Queensland Museum campuses](#), or searching through other [Queensland Museum loan kits](#).

¹ Jamieson, A. (2016). Object-based learning: A new mode in Arts West.
Retrieved from <https://arts.unimelb.edu.au/articulation/editions/2016-editions/december-2016/object-based-learning-a-new-mode-in-arts-west>

Curriculum Links

Science

YEAR 5

Science as a Human Endeavour

Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE083)

Science Inquiry Skills

Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (ACSIS093)

YEAR 6

Science Understanding

Changes to materials can be reversible or irreversible (ACSSU095)

Science as a Human Endeavour

Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100)

Science Inquiry Skills

Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (ACSIS110)

YEAR 7

Science as a Human Endeavour

Solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations (ACSHE120)

Science Inquiry Skills

Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate (ACSIS133)

YEAR 8

Science as a Human Endeavour

Solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations (ACSHE135)

Science Inquiry Skills

Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate (ACSIS148)

YEAR 9

Science as a Human Endeavour

Values and needs of contemporary society can influence the focus of scientific research (ACSHE228)

Science Inquiry Skills

Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (ACSIS174)

Design and Technologies

YEAR 5 AND 6

Design and Technologies Knowledge and Understanding

Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use (ACTDEK023)

YEAR 7 AND 8

Design and Technologies Knowledge and Understanding

Investigate the ways in which products, services and environments evolve locally, regionally and globally and how competing factors including social, ethical and sustainability considerations are prioritised in the development of technologies and designed solutions for preferred futures (ACTDEK029)

YEAR 9 AND 10

Design and Technologies Knowledge and Understanding

Critically analyse factors, including social, ethical and sustainability considerations, that impact on designed solutions for global preferred futures and the complex design and production processes involved (ACTDEK040)

Explain how products, services and environments evolve with consideration of preferred futures and the impact of emerging technologies on design decisions (ACTDEK041)

General Capabilities

Literacy

Comprehending texts through listening, reading and viewing

Critical and Creative Thinking

Inquiring – identifying, exploring and organising information and ideas

Reflecting on thinking and processes

Personal and Social Capability

Social awareness

Ethical Understanding

Understanding ethical concepts and issues

Reasoning in decision making and actions

Intercultural Understanding

Interacting and empathising with others

Cross-Curriculum Priorities

Sustainability

Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems. (OI.3)

World views are formed by experiences at personal, local, national and global levels, and are linked to individual and community actions for sustainability. (OI.5)

Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments. (OI.7)

Designing action for sustainability requires an evaluation of past practices, the assessment of scientific and technological developments, and balanced judgements based on projected future economic, social and environmental impacts. (OI.8)

All Bottled Up: Object Analysis

Student Activity

Object Analysis Prompt Cards

| | | |
|---|--|--|
| <p>Description What does it look like?</p> | <p>Size What size is it?</p> | <p>Date When was it made?</p> |
| <p>Material What is it made from?</p> | <p>Purpose Why did people use it?</p> | <p>User Who used it?</p> |
| <p>Construction Who made it and how?</p> | <p>Condition What condition is the object in?</p> | <p>Significance Why was it collected?</p> |

Object Analysis Table

| Question | Description |
|---|-------------|
| Description – What does it look like? | |
| Size – What size is it? | |
| Date – When was it made? | |
| Material – What is it made from? | |
| Purpose – Why did people use it? | |
| User – Who used it? | |
| Construction – Who made it and how? | |
| Condition – What condition is the object in? | |
| Significance – Why was it collected? | |

Object Comparison

Compare the similarities and differences of the two objects. What are the advantages and disadvantages of their use?

