Exploring familiar objects and materials

Plastic is a vital oil product that is used in countless ways. In this lesson, students will explore the versatility and diversity of plastics.

In this lesson, students will:

- Classify a range of plastic objects according to their properties.

Lesson-level Content Descriptions

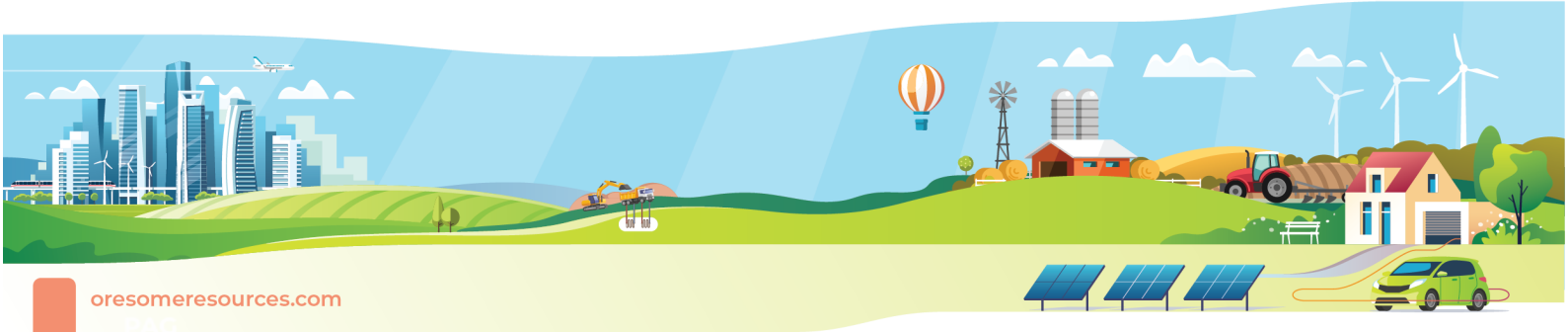
The Australian Curriculum: Foundation
Science as a Human Endeavour

Nature and development of science: Science involves exploring and observing the world using the senses (ACSHE013)

Elaborations

- recognising that observation is an important part of exploring and investigating the things and places around us
- sharing observations with others and communicating their experiences
- exploring and observing using hearing, smell, touch, seeing and taste

Foundation Year achievement standard
By the end of the Foundation year students make observations of familiar objects and materials and explore their properties and behaviour. They suggest how the environment affects them and other living things.



Lesson Outcomes

The assessment focus of this lesson is formative: The classroom activities provide an opportunity for students to generate evidence with which the teacher can establish the student's progress towards understanding the concepts that are being developed in this lesson.

Science Outcomes	Literacy Outcomes	Numeracy Outcomes
Students may/should be able to: • group objects according to their properties	Students may/should be able to: • listen • view • speak	Students may/should be able to: • measure using formal units • collect qualitative data

Background Information

Plastics are made from oil. The wide array of types of plastics makes for an extensive diversity of properties.

Preparation List

- PE hoops or similar to mark areas of the floor for sorting
- Assemble a range of everyday objects from different types of plastics. The following list lists items made from a number of common types of plastics.

Sources of plastics

The following objects may be made of the plastics indicated:

Polythene - low density

- squeezy bottles/tubes
- cable insulation
- film for bags and packaging
- back of carpets (e.g. car carpets)
- ink tubes in ball-point pens
- food storage containers

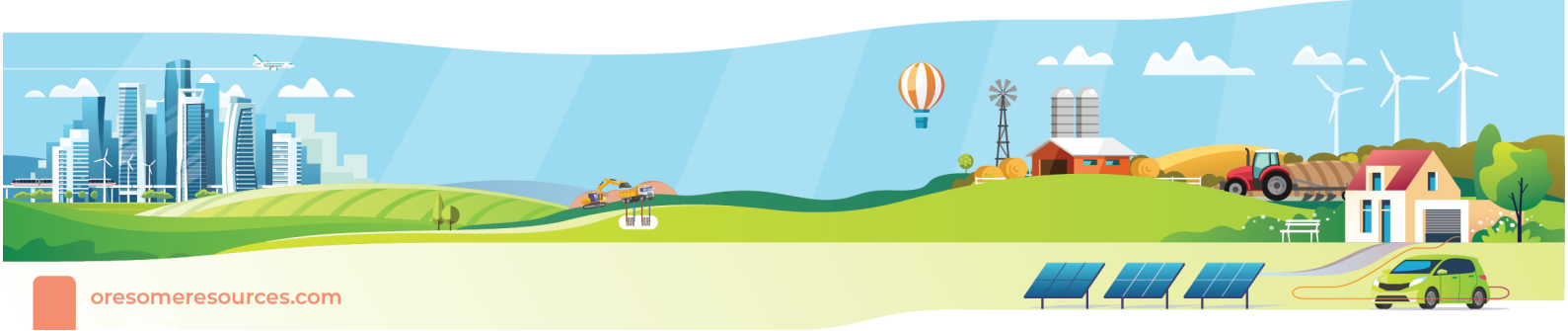
Polythene - high density

- bowls, buckets, beakers
- piping e.g. water pipes
- large cases
- milk crates
- dustbins
- bleach bottles
- doll's bodies
- large toys
- pressure pipes
- kitchenware

PVC

- drainpipes
- gramophone records
- wellington boots
- wallpaper (washable vinyl)
- table cloths
- shower curtains
- baby pants
- macs
- artificial leather
- flooring e.g. kitchen
- DIY blister packs
- hosepipes
- plastic cutlery
- watch straps

Polystyrene



- clear storage containers/jugs in kitchens
- food containers, e.g. yoghurt cartons, clear
- egg boxes
- model kits e.g. Airfix
- ball-point pen and fountain pen cases
- plastic coat hangers

Expanded polystyrene

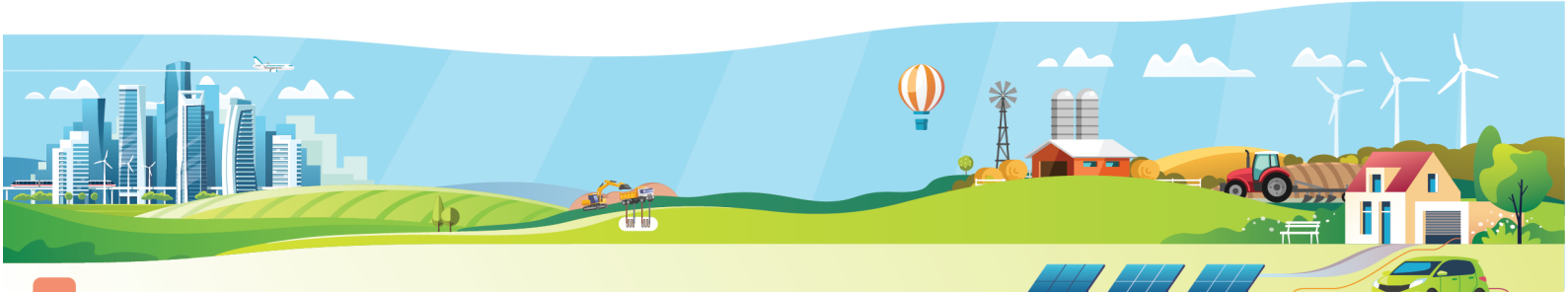
- ceiling tiles
- non-fibrous loft insulation
- fast food packaging
- meat and food trays
- packaging (especially delicate instruments)
- head protection (e.g. cycling helmet)
- disposable cups for hot liquids
- foamed material (sponges)
- egg boxes

Activity Sequence

1. Show children your pile of plastics and ask if they can identify what all the items have in common.
2. Children sort the items into the PE hoops on the floor according to criteria of their choice (such as colour, flexibility, hardness, use, size, transparency, texture, thickness, weight, etc). PE hoops may overlap if items fit into more than one category.
3. Discussion questions: - How can you tell plastics from other materials? - Are all plastics the same?
4. If time permits, will it float? Test each of the different plastic types for their buoyancy.

Opportunities for conducting formative assessment:

- Observe ability to sort and classify accurately.



Links to Other Learning Areas

The following suggested activities may be used to provide a link between the content of this unit and that of other learning areas, in particular those related to Mathematics, English and ICT.

- As an English link, introduce some of the names of the types of plastics. Start with the more commonly known names like polystyrene and PVC.

Additional Resources

http://www.qervisitorcentre.com.au – Extensive overview of QER New Fuels Development Centre, including video snippets, animations, graphs, maps and explanations relating to:

- Australia's fuel challenge
- QER and sustainability
- Benefits for Australians
- Turning oil shale into fuel.

The following resources are above the level of junior primary science but may be of interest for teacher background knowledge:

- Oil Shale fact sheet
- PowerPoint Presentations
  - Paraho Process
  - Formation of Oil Shale – Parts 1 and 2
- Flow diagram: The Paraho Process – Illustrative Process Flows

Lesson	Equipment and Resources
1	PE hoops or similar to mark areas of the floor for sorting Assemble a range of everyday objects from different types of plastics. See the list of plastics above for common items made from each type.