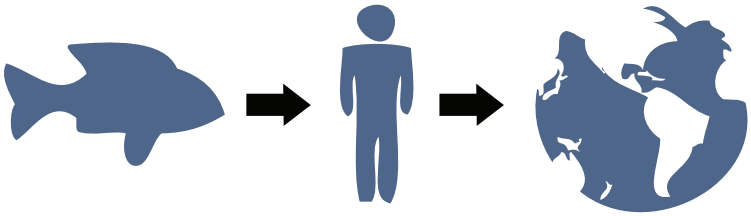
Lesson 3
EXPLORE

AUSTRALIAN
MARINE DEBRIS INITIATIVE

River rubbish

Around the world, plastic pollution has become a growing plague, clogging our waterways, damaging marine ecosystems and entering the marine food web. Much of the plastic trash we generate on land flows into our oceans through stormwater drains and watersheds. It falls from garbage and container trucks, spills out of rubbish bins or is tossed carelessly.



YEAR LEVEL

Years 7 - 10

MATERIALS

PowerPoint presentation
7-10 Lesson 3.ppt

Equipment for Ss to view PowerPoint presentation on

KEY WORDS

- Waterways
- Ecosystems
- Erosion
- Drift
- Source Reduction Plan
- Disperse
- River traps

Orientation:

Elicit ideas from Ss about how rubbish may end up in the ocean. Concepts to cover are: how rubbish can end up on the ground; how rain and wind will move it into the waterways; and how rubbish moves/travels in the marine environment. Most waterways connect to the ocean.

River of rubbish:

Use the River Rubbish PowerPoint presentation to give Ss a visual of how rubbish ends up in the ocean.

Plastic bag mockumentary: http://www.youtube.com/watch?v=GLgh9h2ePYw

A video clip showing how plastic bags can end up in the ocean. Show Ss this video clip for further understanding.

Intercultural concept:

Have a discussion about your local rubbish system – then extend the discussion to overseas. Help Ss understand that every country has different practices due to various reasons including economic, educational and access to infrastructure. It is important to spend enough time discussing the possible reasons so Ss have understanding rather than judgment.

Visual case study: Indonesia's river of rubbish http://www.youtube.com/watch?v=Gu6Gu0tQoqI

A short video clip addressing some of the issues in Indonesia and how rubbish can end up in the ocean. Check for understanding by Ss and elaborate on any areas that Ss find interesting. Discuss some of the types of rubbish in the river and how it has affected and continues to affect the community.

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Data methodology and outputs: local source or international source of rubbish

The rubbish that ends up in rivers is usually from local sources, however, not all marine debris is from a local source. Elicit ideas from Ss regarding the types of rubbish that could be from a local source and debris that might be from elsewhere. Refer Ss to the Marine Debris Source Pattern in Queensland table (Lesson 3 River Rubbish PowerPoint presentation). Have Ss identify the Average Land Source Index and Average Sea Source Index. Discuss why these two indices might be important. Make sure Ss realise it is important to understand the source of rubbish so that a Source Reduction Plan can be made. Land source rubbish is something that comes from our own community and should be easier to make a Source Reduction Plan for.

How the index works:

Refer to the 'how the index works' diagram in the Lesson 3 River Rubbish PowerPoint presentation. Check to see if Ss elicited ideas about what sorts of rubbish may be from a local source and what sorts of rubbish may be from an ocean source. Match the items listed in the diagram. Discuss other aspects of the diagram to help Ss' understanding of what it all means and how rubbish is dispersed into the ocean. Elicit understanding from Ss about how some rubbish items float and some sink. The items that float spread around further and easier. Link this back to the concept that a major source of the problem is that rubbish comes from local sources through our waterways and once in the ocean can spread. Water knows no boundaries – our actions can affect someone else far away.

Extension activities:

Comparison: local or not?

Ss can use maps, internet etc. to research why the majority of marine debris on beaches like Chilli Beach in Cape York in northern Australia, comes from non-local sources (sea sources). Ss can show their understanding of how close some Asian countries are to Australia and may cover the concept that rubbish moves around in the ocean with the currents. Ss could do a comparison study about what types of debris are found near Melbourne's waterways and coastline and why the debris there would be more from a local source. This activity could also be used as an extension for the Lesson 5 Plastic Island, when Ss cover the concept of ocean currents.

Comparison: looking at data from James Cook University on rubbish along Ross River

Research students from James Cook University have collected marine debris data during their clean up activities along Townsville's Ross River. Ss could use the data in the table to look at the difference between the types of rubbish found along rivers with the types of rubbish found along the coast. Rubbish in rivers is a major source of marine debris.

River traps on stormwater drains:

Ss can research what river traps are and why they are useful in helping address the marine debris issue. Ss can do research in their local area to find out if the city council has river traps on stormwater drains and look into why or why not?