Unit of work
Protecting our Australian Fur Seals
Teacher Notes

NB Teacher curriculum notes are accompanied with a PDF file of activity sheets.

This unit of work 'Protecting Australian Fur Seals' is designed for VELS levels 3-5. It has a student learning focus and anticipates that teachers will coordinate student learning and there is little need for instruction.

The topic will enable your students to learn at a deeper level. They will make many links in their understandings and insights. They will learn and discover links between the following:

- The biology and behaviour of the Australian Fur Seal.
- The reproductive cycle of the Australian Fur Seal at the Seal Rocks colony.
- Past and current threats.
- How research is necessary for the conservation of fur seals.
- Finding solutions to seal conservation issues.
- The impact of litter and other pollution on seals.
- How litter and other pollutants travel to the sea via the stormwater system.
- Compare the types of marine pollution that comes from ships and fishing boats with marine pollution that comes from the land.
- We can do things personally, at school, at home and in the community to reduce stormwater pollution.

The activities require students to use the accompanying web pages. These pages have been developed using the following criteria:

- Designed to engage students who are reluctant to read. Each page is kept to about 70 words.
- A core set of potentially new key words are introduced to students. There are not too many new technical words for your students to remember.
- The pages have an appropriate literacy design with a suitably sized text, the illustrations support the text.
- The website is designed to be handled by school networks.
- Your students are provided with recommended websites for extension projects.

Contents

1. Classroom and student preparation

How can your classroom be organised to provide a stimulating learning environment about seals? Will you want to set up the class before your students start the unit?

Some ideas could include:

- Ask your students to contribute ideas to the classroom setup.
- Locate posters and place them on walls.
- Make sure you have access to computers that are connected to the Internet.
- Load a marine screen saver onto computer screens.
- Find out what resources are available in the library.
- Locate videos, DVDs and CD-ROMs.
- As a prior learning activity, each student could contribute a piece of artwork of a seal colony and the marine environment in which they feed. This can be made into a large collage or ceiling hanging. Half the collage could have half the animals and nothing else, while the second half would also contain dangerous litter.
- Identify a location where students' work will be displayed.

WOW activity

Do you want to start your unit of work by stimulating and immersing students into the topic?
You may wish to start with a big WOW. A Wow activity to consider is a visit to the Nobbies Centre where students can participate in a school education program. PINP Education Department offers students the chance to utilise seal viewing cameras within the Nobbies Centre and undertake outdoor interactive activities.

2. Activities – Prior learning

Materials: Art and craft materials, colour pencils, A4 paper

Background: Prior learning activities enable students to value what they already know about a topic. It provides their teacher with some insight into what their students know and think.

Activities: Choose one or more of the following activities or provide an activity of your own. Ideas for prior learning:

1. Using art and craft materials, ask each student to contribute to a collage or ceiling hanging of a seal colony and its feeding grounds. Their work could be suspended from the ceiling.

2. Ask students to write down five things they know about seals.

3. Ask students to describe (written, diagram or verbal) how rain falling around their homes can wash litter and other pollution into the sea.

Key Questions

Why are Australian Fur Seals at risk?
How does scientific research help in the conservation of seals?
What are scientists finding out about Australian Fur Seals?
How can we help in the conservation of seals?

3. Student goals and assessment

Materials: Copy of "Student goal setting" activity sheet

Goals background: Goals assist students to be more involved in self-directed learning, to remain on track and meet their learning objectives.

Activity: Student goals can be developed using all or some of the following three areas:

1. Goals developed from key questions:
   - Understand how seals live in their environment?
   - Identify the causes of why seals are at risk.
   - Analyse data gathered by scientists.
   - Make personal commitments to modify behaviour to reduce stormwater pollution.
   - Communicate to others how they can reduce marine pollution.

2. Goals can relate to the Standards you will be assessing during this unit of work.

3. Individualised student goals can also be developed. These personal goals are aimed at improving individual's learning needs. For example each student will have reflected on their last unit of work. They should be able to identify two aspects where their learning can or should be improved.

Assessment background: Education systems have greater expectations concerning assessment. Having assessment processes in place throughout a unit of work and involving students in their assessment will assist teachers meet these expectations:

- *Assessment of learning* will help teachers respond to students' learning needs during the unit of work.
- *Assessment of learning* occurs when students monitor their own progress and make learning choices.
- *Assessment of learning* occurs when teachers use evidence of what students have achieved. Teachers often measure student progress against Learning Outcomes or Standards (please refer to VELS PDF).

Explain to students how they will be assessed. To assist you with assessing your students throughout the unit of work:

- A grid of suggested assessment tasks has been provided.
- A rubric (that you may wish to modify) is available in the activity sheets.

3. Student goals and assessment (continued)

Theme	Examples of assessment tasks
Activities - Prior learning	• Participation and contribution to a class activity. • A well-considered input relating to their prior knowledge.
Student goals and assessment	• Able to record the required goals for the unit of work. • Shows an understanding of their personal learning needs by setting personal learning goals.
Finding out, sorting out	• Organising work in a team. Working cooperatively with others. • The team takes control of the research. • Sharing information. • Working independently. • Completing tasks on time. • Using different sources to obtain information and solve problems. • Using technology effectively to obtain information. • Providing evidence of how and where they found information. • Extracting and making notes of the appropriate information to answer their questions. • Present ideas and information using a range of formats and media. • Appropriate use of media in preparing a report. • Presentation demonstrates that students answered their questions.
Drawing conclusions, finding solutions	• Organising work in a team. Working cooperatively with others. • Able to weigh up a number of options. • Use creative strategies to solve problems and prepared to take learning risks. • Shows an understanding of how people's activities link to threats to seals' safety. • Presentation of their solutions.
Communication project	• The content of the communication product demonstrates their understanding of the unit of work. • An appropriate media has been chosen and justified for a specific audience. • The communication package is engaging to the chosen audience. • The media has been used in an appropriate way. • The communication product demonstrates creativity.

4. Tuning in

Activity 1 – The Food Web Game

Aim: Students explore the Australian Fur Seal food web

Materials: Cardboard and sticky tape

Safety: This game should take place in a large open area

Method:

1. As a class:

- discuss the types of fish and squid that Australian Fur Seals eat.
- investigate the other animals which may also like to eat the same fish and squid as the Australian Fur Seal.
- look at which animals would eat an Australian Fur Seal.
- explore what other threats Australian Fur Seals face in the ocean (eg. litter, entanglements and fishing nets)

2. Each student is to nominate which animal or threat they would like to be and writes the animal/threat on the piece of card.
The card is stuck to the student's jumper.

3. In a large clear area define the 'boundaries of the ocean' where the students may 'swim' (walk around).

4. The Australian Fur Seals, for example, are trying to catch as many fish and squid as they can. When a student has been caught they stand on the outside 'boundary of the ocean' until the next game. If a student is caught by the rubbish or fishing nets they also stand on the outside of the 'ocean'.

5. When there are only a few students left in the 'ocean' stop the game and discuss which creatures are left.
- are there only the top order predators left in the ocean or have all the creatures been affected by the man-made threats?
- are there only threats left? What effect would this have in the real ocean?

Activity 2 – Litter data

In this activity students learn what kinds of litter in the school ground could end up in the sea. Using the schools normal methods for cleaning litter from the school ground, ask students to gather the litter they can find after lunch. As a class design a record sheet to table the type and amount of rubbish collected. Students will need to record the litter on their data sheet.

Collate the class's data and display it to the class:
1. How could these items of litter end up in the sea?
2. Which items of litter might harm seals? How could they harm seals?
3. How many items of litter might be a threat to seals and other wildlife?

5. Finding out/ sorting out – web research

5.1 Key learning questions

- Why are Australian Fur Seals at risk?
- How does scientific research help in the conservation of seals?
- What are scientists finding out about Australian Fur Seals?
- How can we help in the conservation of seals?

Class discussion

Use a thinking tool that students are familiar with to examine the questions. The tool should be able to relate ideas. Examples of tools include a mind map, tree chart, a word web or put each idea into a bubble and link it to other ideas.

As a class examine the key learning question:
What do students think these question means?

5.2 It's only words

Small group activity and report back to the class.

Using the students' ideas in the previous activity ask small groups of students to see how the following list of words and ideas link with their understanding of pollution.

- Litter
- Stormwater
- Stormwater drains
- Entanglement of seals in litter

Use the glossary to find out more about the following words:

- Species
- Cow
- Bull
- Pup
- Colony
- Pod
- Mating
- Satellite tracking
- Colony

5.3 Research using the web – The life of a seal

Research

What do students want to know about seals? What do students need to find out to be able to answer the key questions?

- Why are Australian Fur Seals at risk?
- How does scientific research help in the conservation of seals?
- What are scientists finding out about Australian Fur Seals?
- How can we help in the conservation of seals?

Students should start their research by exploring the relevant links under 'About Fur Seals' and 'Research Data' and extend their research by going to the 'links' page of this web based resource. They will find many websites of interest.

If students are undertaking searches using search engines to find out more about marine pollution and litter they will find the following key phrases useful:

- Marine debris
- Stormwater pollution
- Marine plastic litter.

Organisation

- Decide if students will be undertaking their research in groups.
- How will students access computers?
- Discuss how students can record their information.
- Brainstorm which key words will be useful when using internet search engines.
- Will students need to record where they located their information?
- Decide whether groups will investigate different questions?
- Inform students which aspects of this research will be assessed.
- Inform students how much time is allocated to completing the research and the presentation.
- Ask students to check their goals.

Presentation

- In consultation with the teacher, students choose an appropriate medium to present their research.
- Students sort their information so their questions are answered.
- Students produce their presentations.

Major issues

As a class, make a list of the major conservation issues. Display the list in the classroom for future reference.

5.4 Exploring scientific research data

Gathering scientific data is necessary for finding ways to conserve plants and animals. Research undertaken by students will have identified some of the conservation issues concerning the Australian Fur Seal.

Thinking

As a class activity, use a thinking tool that students are familiar with to show the links of how people impact on seals.

Sorting and analysing

The 'Research Data' section of this resource utilises data that has been gathered over the past 10 years. Some of the data is presented as maps, tables and graphs.

Divide the class into groups and ask each group of students to investigate some of the research data. The following steps may help them understand and analyse the data:

- What was measured?
- What units of measurement were used?
- What equipment was used to make the measurements?
- How is the data presented?
- What can we learn form the data?
- How might the data help in the conservation of seals?

Verbal presentation

Each group takes two minutes to explain to the class how some of the data that researchers have gathered can help with the conservation of seals.

5.5 Pollution

Use the internet to find organisations, both government and non government, which discuss the issue of marine pollution.

Use the key phrases below to help with your internet search:

- Litter
- Trash
- Sea
- Marine
- Entanglement
- Fishing

5.6 Litter from fishing boats

As a class make a list of litter that comes from boats and fishing ships. Discuss the difference between

- Recreational fishing and commercial fishing
- Australian fishing ships and other fishing ships

6. Drawing conclusions, finding solutions

6.1 Thinking

As a class, use these different ways of thinking to explore and expand what students have learnt.

Explore what students know What do students know about the Australian Fur Seal? How have seals been affected by people in the past? How are seals affected by people today? What kinds of things pollute the marine environment and are risks to seals? How do these materials get into the sea?

Examine how students feel How do students feel about the conservation of marine life? What do students like about seals? How do students feel about seals dieing when they are entangled in litter? Have fishers got a right to be angry at seals eating fish?

Students are critical thinkers How difficult is it to prevent the pollution of the sea? Why aren't people preventing this pollution? How can research help seal conservation?

Students find the benefits Why is the sea important to people? How will preventing pollution help the marine environment as well as seals? Why are seals needed in the marine environment?

Students are creative, find solutions and make recommendations What can schools do to reduce pollution in the ocean? What can fishers do to prevent pollution? What can governments do? What should we do to get people to reduce their polluting activities? What should happen to people including fishers who continue to pollute the environment? What can be done to prevent seals being caught and drowning in nets? What should be done to seals that take fish from fish farms?

Where do students go from here? How has your way of thinking about seals changed? How can we get people to change their behaviour about the pollution they cause? What can you recommend to reduce pollution?

6.2 Finding solutions - Part One

Whole class discussion

Using a familiar thinking tool to brainstorm ask students what they can do as individuals to reduce pollution, litter and waste from fishers.

Once students have finished brainstorming their ideas you could do the following:

1. Ask students to choose some of their pollution ideas to construct a test for the week. Students record solutions and provide feedback after a week.
2. Students share their knowledge about reducing their impact on pollution with the class.
3. Students may now be ready to make a personal pledge. They decide on actions they intend to undertake to make sure they reduce pollution. They should record their pledge and keep it in a safe place.

6.3 Finding solutions - Part Two

Small group activity

Students reform the groups that they were in for the 'Research Data' exercise. The group rework solutions to describe how they might solve some of the school's pollution issues through working through the following questions:

The questions are:

- Does the school have a litter problem?
- List possible solutions?
- Does the school community need to change their behaviour?
- Why would they change their behaviour?
- What can be done to help them change their behaviour?
- Who can change it?
- What will they need to do?
- Does something physical need changing or something new need to be purchased?
- Who will benefit if we reduce pollution in the ocean?
- How much might it cost?
- Who would do it?

6.4 Sorting

Whole class activity

Discuss and choose criteria to help students sort their solutions.

Criteria can include:

- Solutions that are similar can be easily grouped together.
- Those solutions that are cheap to implement compared to those that will need a budget.
- Solutions that can be done by:
    - Students with a little adult help
    - Students and adults
    - Only by adults in the school
    - By adults with specialist trades or professions.
- Solutions that will require detailed planning to be submitted to school decision makers.
- Solutions that although challenging for students, will be able to be done by them.
- Solutions that will have a large impact on the reduction of the school's pollution.
- Solutions that are likely to have a large impact on people's behaviour.

6.5 Deciding

Whole class activity

Discuss which of the above criteria are the most important to students? How many solutions do students think they can manage? Which solutions stand out as the best for students to implement?

The teacher may wish to or need to impose some criteria (i.e. it may be necessary to veto some solutions). If you do, provide students with clear reasons.

Examples of reasons might be:

- It will be too much work for the teacher and too little work for students.
- OH&S concerns of the school may mean the project cannot be approved.

As a class, decide on a number of solutions. It may be as many as ten with an expectation that a couple of the solutions may not get off the ground.

7. Social action and communication

7.1 Small group activity: Action Plans

Small groups are given one or two solutions to plan. Student groups will need help to make sure all aspects of their planning are covered. Because some of the student solutions could be unique, it is not possible to list every contingency in the list below, so it is important that their teacher carefully goes through each plan making necessary modifications, before students implement their plans.

Before students start their plan they should answer the following about their solution:
- What will be achieved by this solution?
- What are the benefits that will result from the solution?
- Why is this solution important to the health of the environment?
- How might the solution benefit people?

Criteria students may need to consider when making their plan:
- Start by organising all the steps needed to implement the plan.
- Identify who will need to approve and comment on the plan.
- What tasks are going to be done to put the plan into operation?
- What resources will be needed to do the tasks?
- Who will do the tasks?
- How will students remain safe?
- How much time will be needed to complete the solution?
- How will the group measure how successful their solution was?

Students should produce a first draft of the plan and submit it to their teacher for comment. When the comments have been received, students are to make the necessary changes. To make sure students are clear about the comments, it may be helpful to also provide two way verbal feedback.

7.2 Implementing the action plan

Teachers should review the relevant aspects of the school's code of behaviour and OH&S procedures with students. As most students will be working with a large degree of independence, they will need to report back to their teacher on their progress.

Once students are ready, they should implement their solutions.

7.3 Communication project for fishers

Materials: Access to a wide variety of media, "PMI assessment" activity sheet.

Background: Communication projects enable students to apply their knowledge and the personal values they have developed.

7.4 Choosing an audience

Students will develop a communication product for an audience. The communication product provides the audience with an example of what they can do to reduce their impact on the sea when they fish:

1. Choose an audience e.g.
   a. Other students
   b. Families that are involved in fishing
   c. People who read the local newspaper or listen to local radio stations
   d. The fishing industry
   e. Consulates in Australia of those countries that fish in or close to Australian waters

f. People in authority
g. Other groups and organisations students feel are relevant.

2. Identify some characteristics about their audience.

3. Identify the kind of media their audience commonly uses.

7.5 Analysing their audience

Ask students to analyse their audience by:

1. Linking the interest of their audience to the message they wish to communicate.

2. Identifying appropriate media that link the message and the interest of their audience (the media are often restricted by the budget available). Communication products can include:
   a. Posters
   b. Billboards
   c. Letters – postage
   d. Radio commercials
   e. TV commercials
   f. Newspaper advertisements
   g. Press releases
   h. Musical jingles
   i. PowerPoint presentations
   j. Webpage
   k. Newsletter
   l. Email
   m. Competition

7.6 Develop the communication product

Allow groups or individuals to design and develop their communication product. Students should write attached notes explaining how their product should work.

7.7 PMI student assessment

Use the "PMI" (plus – minus – interesting) Activity sheet. In this activity students look at another student's work and write down what they think the pluses and minuses are and describe what they found interesting. Ask students to complete a PMI so that each piece of work has at least two or more assessments. The PMI assessment should not be written on the other students' work.

8. Reflection

Materials: Reflection activity sheet

Background: Reflection time provides students with an opportunity to value what they have learnt and the learning processes they have been involved in.

Activity 1

Reflection activity sheet

Your students may have preferred reflection strategies, so they should use these. The reflection activity sheet in this unit of work can be used to provide some structure while reflecting.