

SCIENCE







Lesson 9

Prep

Topic: The impact of human actions

Considering actions that harm environments

Lesson concepts

-  Living things have basic needs
-  Science involves exploring and observing the world
-  Questions can obtain responses
-  Observations can be made using the senses
-  Observations can be discussed
-  Observations and ideas can be shared

Learning alerts

Be aware of:

- students who may not understand that their own actions can impact on the survival of living things, even if they can't see them.

Suggested next steps for learning

- Explain that their actions may impact on the environment of living things, and this can affect whether needs are met. If needs are not met, living things will not survive in this environment.

Today students will:

- ▶ understand that humans' actions can impact on living things.

Resources

Digital

Slideshow — Actions that harm environments

Find and prepare

Sheet — River flowing into the ocean

Model/figurine of a person, a plant and an animal (for example: construction game pieces, plastic models)

Large bowl or container (preferably transparent)

Paper towel (for mopping up spills)

50–60 cm plastic tubing (ideally 20 mm diameter)

Large funnel (to fit in end of tubing)

Jug of water (small to medium)

Small plastic sea creature

White vinegar in vinegar bottle ($\frac{1}{4}$ cup)

Cooking oil ($\frac{1}{4}$ cup)

Medium to large feather (water bird type would be ideal but otherwise any)

Items for students to 'pollute the oceans' (for example: small pieces of plastic straw, matchsticks, small pieces of tissue, foil, lolly papers, grass clippings, plastic rings from milk container lids, small pieces of plastic bag, small pieces of food, detergent, non-toxic paint, fishing line, small balls of brown modelling dough replicating animal faeces)

Spoons, eyedroppers or tweezers to help add 'pollutants'

Bucket for disposal of polluted water (please dispose of this on your lawn or outside, not down the drain)

Scrapbook

Key terms

pollution, human actions (impact), environment

For definitions and explanations of terms, please see the [Glossary](#).

Lesson

Review learning about needs and the environment

Display a model/figurine of a person, an animal and a plant.

Focus question

Q: *Explain to me what you have learned from our science lessons about living things and the environments they live in.*

A: For example: Statements about living things having basic needs for survival that include food, water, shelter, air. Sometimes the needs of plants and animals are met by people and other times they must be met by the environment.

Contemplate human impact

Hold your hands around the three models so they are touching each other.

Say to students

6 Animals, plants and people often live in the same 'environment' together. Farms, zoos, beaches, cities, towns, gardens and our homes are some environments where people, animals and plants live together. 9

Focus questions

Q: *Which living thing—animals, plants or people—do you think can make the most changes to an environment?*

A: For example: People.

Q: *Why do you think this?*

A: For example: Because they have machines to help them; there are lots of people; people are strong, people are clever.

Q: *Can you think of things which people do that are good for the environment?*

A: For example: Not littering, recycling, picking up rubbish on beaches, planting trees and gardens, using 'enviro' bags, caring for wildlife, donating to charities such as 'save the whale', using solar energy.

Q: *Why are these things good for the needs of living things?*

A: For example: They keep the environments clean and provide better for the needs of living things.

Say to students

‘ We are now going to look at some pictures of when humans act in ways that do not help to provide for the needs of living things. We call these ‘human actions’.

Click on the picture to view and discuss the **Slideshow — Actions that harm environments.**



Investigate pollution

Say to students

‘ It is the job of some scientists to observe and study the effects of pollution on living things. These scientists help us understand the impact that people have on different environments.

We are now going to work like scientists and conduct an investigation about pollution and how it can affect the needs of living things. We are going to observe the effect of pollution when it is washed down the rivers and streams into our oceans.



Display the **Sheet** — [River flowing into the ocean.](#)

Say to students

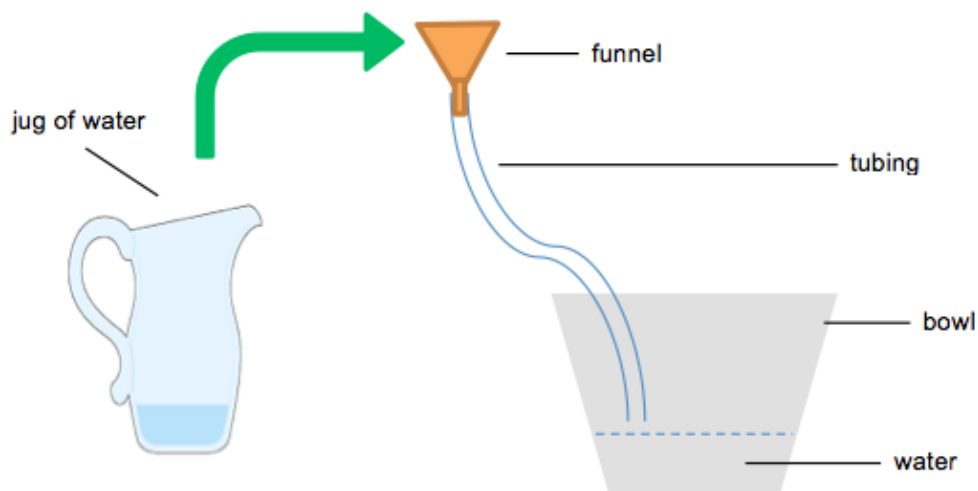
‘ This is a picture of a river flowing into the ocean. The water in the river comes from a long way, from the mountains, past farms, cities and factories. We are going to use some equipment to make a model of the river flowing into the ocean.

Place the box of equipment on a suitable table.

Select the bowl, tubing, funnel and jug of water and place in front of students (adjust the instructions as necessary based on the materials you are using).

Say to students

‘ We are going to pretend that the bowl is the ocean. The tube is going to be the river flowing from inland into the ocean. Put the funnel into the top end of the tube so we can pour water easily into the tube. Now pour some of the water into the funnel to begin our ocean. This is like the rain falling on the mountains, running down into the creeks and streams, then into the river and the ocean. ’



Show a plastic sea creature and a feather and ask your student to place them in the ocean.

Say to students

‘ We will pretend the feather is an ocean bird. The sea creature and bird are happy at the moment. They can meet their needs because they live in a healthy environment.

But people who live in towns (even way up the river) sometimes throw their rubbish on the ground and into the river. This is called littering. ’

Focus questions

Q: *What sort of rubbish do you see thrown on the ground?*

A: For example: Cans, paper wrappers, drinking straws, plastic bags, bottles, paper, and cigarette butts.

Q: *Where do you think the rubbish might go when it rains?*

A: For example: It would be washed into gutters, which carry the rubbish to rivers and out into the ocean.

Say to students

‘ We are going to place small examples of litter in the funnel. Here are small pieces of foil, tissue, lolly papers, straws and plastic bag. We will pretend they are different types of litter. Put them in the funnel.

Now we are going to make it rain again. Pour some more water into the funnel and observe what happens. The water travels along the creeks and rivers carrying the litter with it. Then it runs into the ocean and the litter ends up in our ocean with our sea creatures. ’

Focus questions

Q: *What do you think sea turtles like to eat?*

A: Jellyfish, little fish, sea sponges, sea grass.

Q: *What do you think might happen when a sea turtle sees a plastic bag that looks like a jellyfish?*

A: It might/will eat it.

Q: *Do you think plastic bags will provide for the needs of the turtles? Why/why not?*

A: No, it will make them sick. It gets stuck in their stomach so there's no room for real food.

Say to students

‘ The rubbish would also affect the bird. It could get wrapped around its legs and cut into them and they might also think the rubbish is fish and eat it.

Rubbish is one thing that ends up in the ocean, but there are other things that people may wash down their gutters, or factories may wash into rivers.

We will add some other things to our river and ocean. I will give them to you and we will observe the effect that it could have on the sea creatures. ’

Provide a selection of the following things one at a time. Observe and discuss the possible effects on the sea creatures from:

- detergent
- paint
- vinegar (explain that some chemicals can look similar to water but they are very dangerous for our oceans)
- brown modelling dough to represent animal waste
- pieces of food.

Say to students

6 All of these things are starting to make the ocean an unhealthy place to live. They kill the plants, coral, tiny creatures and fish in the ocean and then all the other creatures have no food or shelter. They have poisons in them that the animals swallow and get on their skin/fur.

There is one more thing we are going to put into our ocean. This is oil. Oil is sometimes washed down the drains by people and factories, and other times oil comes from big ships that run into rocks.

Here is some oil to pour into our ocean and observe what happens. ,

Give your student the cooking oil to pour directly in the ocean. Tell them to feel the sea creature and the feather.

Focus questions

Q: *What do you observe?*

A: Answers will vary greatly but should include the way the oil spreads and sits on the top of the water. They may describe the way the creature and feather are affected.

Q: *What do you think might happen when a sea bird lands on the ocean or the animals swim in it?*

A: They will get oil on them.

Q: *Observe the feather. What does the oil do to the feather?*

A: For example: It makes it slimy and sort of stick together.

Q: *Do you think the bird could fly very well or at all? Why/why not?*

A: For example: No, it couldn't fly because its feathers are sticky/slimy.

Q: *If birds can't fly do you think they can meet their needs? Why/why not?*

A: For example: No, because they wouldn't be able to find food. They wouldn't be able to fly to their nest.

Say to students

6 As you can see, all of these things make it very difficult for the ocean animals and plants to meet their needs. If they cannot meet their needs, they cannot survive. ,

Consider own actions

Say to students

‘ We are now going to clean up our investigation. We will remove all the bits of plastic and rubbish and dispose of them in the bin. We will tip the water on a bare area outside that is not near a drain.

While we are cleaning up I want you to think about things we do that impact on living things and their environments. ’

Focus questions

Q: *What good things do you do that affect living things?*

A: For example: Not littering, feeding and watering animals and plants, not pouring paint down the drain.

Q: *Why do these things help living things?*

A: For example: They provide for their needs and keep their environment clean and healthy.

Q: *What things do you do that might make it harder for living things to meet their needs?*

A: For example: Sometimes I forget to feed the dog or put the recycling out, sometimes I litter.

Say to students

‘ We have learned in this lesson that what we do as people can have a big impact on other living things. We must think about our actions so that all living things can have their needs met. ’