

Story of a Catchment

VELS Links

Science

English

Humanities—Geography

Communication

Thinking

Health & Physical Education

Theme:

This activity encourages students to explore the links between water quality, lifestyle, land use and decision making processes.

Preparation:

The focus for this activity is the catchment— the different parts of it, mountain, valley and plain, the quality of the water and how different land uses effect it. This activity can be used as an introduction, mid-topic, or at the conclusion to the unit.

Before starting this activity, discuss the concept of Australia being the driest inhabited continent and therefore water being one of the most important elements of our survival. Also that each one of us lives in a catchment and therefore can affect the quality of our waterways either indirectly or directly.

There are more of these discussion topics at the end of this story and often these are better at the end of the activity so that the visual impact of water is greatest.

Procedure:

Make sure each of the land uses is represented by a canister and that it is filled with the appropriate substance.

Place the fish tank containing 4-5 litres of water centrally in the room.

All substances are non-toxic. Distribute the canisters amongst the group, and do not open until their 'character' emerges in the story.

Read the story aloud. As the land uses are mentioned (**bold word**), each person with a canister is to empty it into the tank of water which represents the river in our catchment.

At the end of the story, use the discussion questions to discuss the elements within the story.

You may like to flash the picture cards for each land use when students are emptying their canisters

MATERIALS

Fish tank with clean water

Canisters (empty film canisters work well) labeled and filled with specified land use substances

You may like to use 2 canisters for each land use so that each student can take part

Picture cards for each landuse

the story of a catchment

This is the story of an important catchment—the Goulburn Broken Catchment. It begins in the high country, where rain runs off the mountains and starts its long journey inland through the valleys and plains before flowing into the longest river in Australia, the Murray River.

We start in the upper part of the catchment in a town. There are lots of **small towns** that have been built on the banks of creeks. These towns all take their drinking water from the local creek as well as put their treated and untreated waste water back into the same creek. This contributes to the overall nutrient load of the catchment, as there would be over 20 small towns doing the same thing.

We are now in a very beautiful part of the catchment, where **tourism** has become an important industry. Wave hello to the charter boat that is giving some people a scenic tour of the river. Drinks are for sale on board but not everyone uses the rubbish bins that are provided.

Going downstream from the upper catchment, recreation is a popular pastime. Someone is **fishing** on the river bank. Unfortunately their line gets caught around a rock and is left in the water. Other people are **water-skiing** along the river. We can see that their boat needs a service and in the meantime its engine is leaking oil into the river. Another group of people are enjoying a **picnic** at a park overlooking the river. A gust of wind blows some of their rubbish off the table and into the stream.

As the fast flowing river flows down into the valley, the water quality is good so a **fish farm** has been set up on the river. We can't actually see what the problem is but scientists have done tests that tell us that the waste coming from the fish farm is mainly nutrients and this contributes to the nutrient concentration in our river.

We are now in the mid catchment. The towns here are a little bigger than in the upper reaches of the catchment and require more infrastructure. We can see someone driving into their home in a new **housing estate**. When developing this area, the planners cleared the land of all vegetation and so the loose topsoil has been washed into the stormwater drains and into the local creek. The new **roads** collect brake fluid, petrol, rubber and other contaminants that are also washed into the stormwater drains and eventually into the creek. Most of the houses in the developed part of town have a **garden**. Someone has mowed their lawn and instead of sweeping up the lawn clippings on the driveway, they have hosed them into the gutter, down the stormwater drain and eventually the clippings end up in the river.

Going further down the catchment, we are now in the plains. Intensive **dairy farming** is a major land use. Land is irrigated to produce the pasture required for milk production, using water from **channels**. Poor irrigation practices means that excess water, animal waste and fertiliser flows off irrigation bays and into irrigation drains which eventually end up in the river.

Another irrigated land use in the plains area are the many **orchards** that provide more than half of Victoria's fruit production. The orchard area has a bad watertable problem. The excess water that is used for irrigation soaks into the soil and lifts the groundwater level close to the surface bringing salt with it. Fruit trees do not like salty water around their roots. To lower the watertable, groundwater pumps are used to drag water out of the ground and into the irrigation drains. This salty water ends up in the rivers and creeks.

Some of the fruit from the orchards is processed at a **factory**. The factory uses detergents to keep its equipment clean. But sometimes the dirty water is hosed out of the factory and into the gutter where it disappears into a stormwater drain. Once again this water flows straight into the river.

As the catchments' main creeks and rivers meander across the low-lying flood plain, land use turns into grazing land. Stock such as grazing cattle use these creeks and rivers for drinking water and keeping cool in the heat. The hooves of the sheep and cattle are very hard and they break up the soil around the stream and cause soil erosion. We can actually see where the soil is washing into the stream which flows into the river.

All of the rivers and creeks in the Goulburn Broken Catchment finally drain into the Murray River—but look what flows with it!!

Discussion:

How did you feel about the change in the colour and look of the water?

How would you feel about drinking or swimming in this water?

Why was the water so different in appearance at the end of the story?

Do you think this is like the real situation, is this how pollution might occur in our catchment?

How can you help? For each of the canisters/land uses, list actions that everyone can do to help reduce the pollution.

List ways that pollution in a catchment might affect you personally. Were there any types of water pollution in this activity illegal? If so, why aren't laws or penalties to protect waterways more effective?

What are some of the ways we could get this catchment message across to the whole community?

Landuse Canisters:

<u>Landuse</u>	<u>Substance</u>
Small Towns	water/food colouring (green)
Tourism	scrap bits of paper
Fishing	small piece of fishing line
Water skiing	vegetable oil
Picnic	cut up plastic container
Fish farm	water/food colouring (yellow)
Housing estate	thick muddy water
Roads	soy sauce or vinegar
Garden	grass/leaves
Dairy Farming	detergent
Channels	dirt or muddy water
Orchards	salt
Factories	water/food colouring (red)
Grazing Cattle	coffee