

RIVER HEALTH PROGRAMME - BUFFALO RIVER



DEPARTMENT OF WATER AFFAIRS AND FORESTRY



WATER RESEARCH COMMISSION



DEPT. OF ENVIRONMENTAL AFFAIRS AND TOURISM



RHODES UNIVERSITY



UNILEVER CENTRE FOR ENVIRONMENTAL WATER QUALITY



CSIR



NORAD

EDUCATOR'S FACILITATION GUIDE



FOUNDATION PHASE

This poster can be used effectively in the classroom to promote the achievement of the following Learning Outcomes and Assessment Standards, as well as to promote the active integration of History and Geography.

Social Science History

Grade 2

Core Knowledge: Social experiences over time (e.g. homes, food and dress)

LO 1 The learner will be able to use enquiry skills to investigate the past and present

- AS 1 Obtains information from historical sources provided by the teacher.
- AS 2 Answers simple questions about stories of the past.
- AS 3 Describes orally and in short sentences aspects of the past that have been learned from sources, makes models, create drawings, acts and dances.

Examples of tasks to achieve these LOs and ASs

- Ask learners to count the number of cattle and describe what the cattle are doing in the poster.
- Ask learners to describe the way in which the people in the top right of the poster are dressed and what they are doing. Compare the dress and activities to people today.
- Ask learners to act out how they think these people of the Eastern Cape would have lived in the past, using the information in the top right corner to help them.

Grade 3

Core Knowledge: Different places of historical significance in the learner's life

LO 1 The learner will be able to use enquiry skills to investigate the past and present

- AS 1 Obtains information from historical sources.
- AS 2 Answers questions about aspects of the past.
- AS 3 Describes orally and in sentences aspects of the past as a class or in small groups, makes models, creates drawings etc.

Examples of tasks to achieve these LOs and ASs

- Ask learners to count the number of ways in which the river is being used and describe how they are using it.
- Ask learners to imagine what a day in the life of a person depicted in the top right hand corner would be like.
- Ask learners to make a small speech describing life in the Eastern Cape in the past.

Social Science Geography

Grade 1

Core Knowledge: Safe and unsafe places (including actions to prevent danger). People's experiences of place (basic needs).

LO 2 The learner will be able to demonstrate geographical and environmental knowledge and understanding.

- AS 2 Describes oral and dislikes about a local area or place.
- AS 3 Organises and interprets information relevant to the enquiry from simple graphs, maps and statistical sources.
- AS 5 Uses information to suggest answers, propose alternatives and possible solutions.

Examples of tasks to achieve these LOs and ASs

- Ask learners to examine the poster and state which activities they can see that they also like doing and which ones, that they can see that they do not like doing.
- Which activities are in the poster are safe and which are unsafe?
- Which places shown in the poster are safe and which are unsafe?
- Make a list of basic needs and see how they are being met in the poster.

LO 3 The learner will be able to make informed decisions about social and environmental issues and problems.

- AS 1 Identifies and describes issues affecting personal health or safety in the school and/or home environment.
- AS 2 Identifies the factors which make certain places harmful or unsafe in the school and/or home environment.
- AS 3 Suggests ways to improve personal health or safety by proposing solutions or alternatives that will reduce the risk to personal health or safety.

Examples of tasks to achieve these LOs and ASs

- Ask learners to look for the blocked sewer systems and then to think if they have seen events from the past as a class or in small groups, makes models, creates drawings etc.
- Ask learners to tell you what things in the poster could pose a danger to humans.
- They should be able to give you a reason for their choice.
- Ask learners to make recommendations to the people in the poster on how they can improve their personal health and safety.

Grade 2

Core Knowledge: Variety of housing types and their immediate environments. Availability of resources, open spaces, recreational sites. Location of resource and daily use (e.g. of water). Actions that could be taken to improve places in the local environment. Picture maps of places showing key features and connections between them.

LO 1 The learner will be able to use enquiry skills to investigate geographical and environmental concepts and processes.

- AS 1 Observes and records what people do at various places.
- AS 2 Identifies and describes significant features of places in the local context.

Examples of tasks to achieve these LOs and ASs

- Ask learners to determine what sorts of jobs the people in the poster have.
- How are the people in the poster making use of water?
- Some places in the poster are not in such a good condition, what would you like to suggest is changed in these places?
- Which dam is closest to the McIntyre Bridge?

LO 2 The learner will be able to demonstrate geographical and environmental knowledge and understanding.

- AS 1 Observes and names different ways land is used in the local area and compares it with examples from other places.
- AS 2 Explains where different products are made and grown in the local area and how they are used.
- AS 3 Describes how and why places are changing in the local environment.

Examples of tasks to achieve these LOs and ASs

- Where do the learners think the river water actually comes from?
- What sort of farming is taking place on the poster? Look at the poster carefully, in what sorts of ways are people using the land and the river?
- What products are made in the textile factory?
- How have alien invasive plants changed the river?

LO 3 The learner will be able to make informed decisions about social and environmental issues and problems.

- AS 1 Identifies and describes environmental issues in the place where the learner lives or goes to school.
- AS 2 Describes the factors leading to the problem in the local context.
- AS 3 Identifies the factors leading to the pollution problem in the local context.
- AS 4 Suggests things that could be done to reduce the pollution and improve the place where the learner lives or goes to school.

Examples of tasks to achieve these LOs and ASs

- Think about your school and the area that you live in, are there any problems similar to the ones shown in the poster? Describe them.
- Look at the poster, what possible reasons could there be for the pollution?
- How can you improve the environment near where you live or go to school?

Grade 3

Core Knowledge: Different types of land use in the local area (farms, forests, residential, nature reserves, open spaces, recreational sites). Location of places on simple maps and the position of places in relation to one another. Concepts of pollution and its broad effects. Managing water: reducing, recycling and re-using.

LO 1 The learner will be able to use enquiry skills to investigate geographical and environmental concepts and processes.

- AS 1 Finds information on people and places using a range of sources.
- AS 2 Answers questions about key features of people, places, resources and changes in the environment.
- AS 4 Uses symbols and identifies basic features of a place on a simple map.

Examples of tasks to achieve these LOs and ASs

- Where is the rubbish from our homes and schools going to?
- Show on the poster where there is farming taking place.
- Indicate which dam is the nature reserve closest to?
- Can you see pollution on this poster?

LO 2 The learner will be able to demonstrate geographical and environmental knowledge and understanding.

- AS 1 Observes and names different ways land is used in the local area and compares it with examples from other places.
- AS 2 Explains where different products are made and grown in the local area and how they are used.
- AS 3 Describes how and why places are changing in the local environment.

Examples of tasks to achieve these LOs and ASs

- What sort of farming is taking place on the poster? Look at the poster carefully, in what sorts of ways are people using the land and the river?
- What products are made in the textile factory?
- How have alien invasive plants changed the river?

LO 3 The learner will be able to make informed decisions about social and environmental issues and problems.

- AS 1 Describes one or more pollution issues in a particular context.
- AS 2 Identifies the factors leading to the pollution problem in the local context.
- AS 3 Identifies the impact of the pollution on the local environment.
- AS 4 Suggests ways to reduce the pollution problem being investigated.
- AS 5 Proposes solutions to reduce the pollution problem being investigated.

Examples of tasks to achieve these LOs and ASs

- Can you see where the river is polluted?
- What is making the river to be polluted?
- Think carefully, now that the river is polluted, can we use the river in the same way as before or not?
- What suggestions do you have for the pollution?

INTERMEDIATE PHASE

This poster can be used effectively in the classroom to promote the achievement of the following Learning Outcomes and Assessment Standards, as well as to promote the active integration of History and Geography.

Social Science History

Grade 4

Core Knowledge: History of the local area places, resources, natural features, place names, river names, landmarks.

LO 1 The learner will be able to use enquiry skills to investigate the past and present

- AS 1 Identifies information from various sources.
- AS 2 Organises information under given headings.
- AS 3 Identifies symbols used in different kinds of maps.

Examples of tasks to achieve these LOs and ASs

- Name those parts of the river that is noted as being of poor quality.
- List all the names of the places that are downstream of the McIntyre Bridge.
- Which part of the river would you say it is safe to swim?

Grade 5

Core Knowledge: Provincial histories (including heritage and identity and the significance of place and river names, as well as indigenous environmental practices.

LO 1 The learner will be able to use enquiry skills to investigate the past and present

- AS 1 With guidance, selects and uses sources of useful geographical information.
- AS 2 Distinguishes between facts and opinions.
- AS 3 Categorises information.
- AS 6 Identifies and explores possible solutions to problems.

Examples of tasks to achieve these LOs and ASs

- Research task - find out the meanings of the names of the various settlements along the Buffalo River.
- The water quality at Baisis is of a fair quality. Is this a fact or an opinion?
- List all the parts of the river that are in a good condition.
- One of the problems with the river in Bhishe is that the river is polluted with sewage. What can be done to solve this pollution problem?

Social Science Geography

Grade 4

Core Knowledge: Settlement features e.g. types of buildings, roads, facilities, industries. Urban vs rural. Settlement sizes. Resources and services within a settlement e.g. water, sewerage, waste removal. Access to water and the management of water resources. The eight points of the compass.

LO 1 The learner will be able to use enquiry skills to investigate geographical and environmental concepts and processes.

- AS 1 Identifies information from various sources.
- AS 4 Locates places using a simple grid referring system and directions.
- AS 6 Uses information from sources to answer questions about people and places.
- AS 7 Uses geographical and environmental concepts and terms to report on enquiries in different ways.

Examples of tasks to achieve these LOs and ASs

- Which of the settlements shown in the poster are rural settlements?
- What features of human settlements are shown on this poster?
- What settlement do we find North West of East London?

LO 2 The learner will be able to demonstrate geographical and environmental knowledge and understanding.

- AS 1 Describes the features of the local settlement, including land use, and compares them with examples from other places.
- AS 2 Describes the importance of access to resources and services for people living in settlements.
- AS 3 Describes how basic human needs were met in the past and at present.

Examples of tasks to achieve these LOs and ASs

- What are the land uses in the settlement of Ginsburg compared to that of East London?
- What are the land uses in the settlement of Ginsburg compared to that of East London?

LO 3 The learner will be able to make informed decisions about social and environmental issues and problems.

- AS 1 Identifies issues associated with resources and services in a particular context.
- AS 2 Identifies the factors that influence why some people have better access to resources compared to others in a particular context.
- AS 3 Suggests ways to improve access to resources in a particular context.

Examples of tasks to achieve these LOs and ASs

- Do the people of King William's Town have better access to services that those living in Olyshuis?

Grade 5

Core Knowledge: Resources (links between natural resources and economic activities; use and abuse of natural resources (focus on water). Health and welfare (distribution of cholera and why some people are more at risk than others).

LO 1 The learner will be able to use enquiry skills to investigate geographical and environmental concepts and processes.

- AS 1 With guidance, selects and uses sources of useful geographical information.
- AS 3 Categorises information.
- AS 6 Identifies and explores possible solutions to problems.

Examples of tasks to achieve these LOs and ASs

- List the ways in which people in the area are abusing the river system?
- Which people are at risk of getting cholera in this poster?

LO 2 The learner will be able to demonstrate geographical and environmental knowledge and understanding.

- AS 2 Identifies links between natural resources and economic activities in South Africa.
- AS 3 Describes ways in which the physical environment influences human activity and how human activity is influenced by the physical environment.

Examples of tasks to achieve these LOs and ASs

- How does the river help the economy of the area?
- Look at the river, notice that most of the settlements are close to the river. Why do you think this is so?

LO 3 The learner will be able to make informed decisions about social and environmental issues and problems.

- AS 1 Identifies challenges to societies and settlements with a focus on the spread of diseases.
- AS 2 Explains the factors that cause some people to be more at risk of disease than others.
- AS 3 Suggests the best way, from a range of alternatives, to reduce risks of disease.

Examples of tasks to achieve these LOs and ASs

- How could the pollution of the Buffalo river result in the spread of diseases?
- Which communities/settlements along this river are more at risk of contracting cholera?
- How could the possibility of cholera be avoided in this catchment?

SENIOR PHASE

This poster can be used effectively in the classroom to promote the achievement of the following Learning Outcomes and Assessment Standards:

Social Science Geography

Grade 7

Core Knowledge: Natural hazards (floods and droughts and poor environmental management, prevention and risk reduction).

LO 1 The learner will be able to use enquiry skills to investigate geographical and environmental concepts and processes.

- AS 2 Organises and interprets information relevant to the enquiry from simple graphs, maps and statistical sources.
- AS 5 Uses information to suggest answers, propose alternatives and possible solutions.

Examples of tasks to achieve these LOs and ASs

- What measures have been taken in this catchment to prevent a shortage of water in a drought period?
- What human activities in this catchment could cause flooding?

LO 2 The learner will be able to demonstrate geographical and environmental knowledge and understanding.

- AS 1 Describes and explains how natural hazards such as flooding occur and their impact on human lives and socio-economic activities.

Examples of tasks to achieve these LOs and ASs

- If a flood episode was to occur in this catchment, which local settlements would be affected the most and how would they be affected?

Grade 8

Core Knowledge: Natural resources (water and how it is used, its conservation and protection, threats and opportunities in water). Community development, ecotourism and sharing resources).

LO 3 The learner will be able to make informed decisions about social and environmental issues and problems.

- AS 1 Identifies challenges to societies and settlements associated with the use and abuse of people and natural resources.
- AS 2 Examines the unequal distribution of, and access to, resources in different contexts.
- AS 3 Investigates possible ways of reducing resource consumption.
- AS 4 Makes suggestions to guide sustainable living practices in a particular context.

Examples of tasks to achieve these LOs and ASs

- Getting people in this catchment to reduce their water consumption is a major challenge. How would you suggest people in the region save water?
- Does everyone in the catchment have the same access to water? Explain the differences.

LO 2 The learner will be able to demonstrate geographical and environmental knowledge and understanding.

- AS 1 Describes and explains how natural hazards such as flooding occur and their impact on human lives and socio-economic activities.

Examples of tasks to achieve these LOs and ASs

- How will the implementation of sustainable development, such as reduced water consumption, help the people of the region?

Grade 9

Core Knowledge: Sustainable use of resources (future sustainability).

LO 1 The learner will be able to use enquiry skills to investigate geographical and environmental concepts and processes.

- AS 1 Analyzes and reaches conclusions about information from sources such as photos, maps, atlases, graphs, and statistics.

Examples of tasks to achieve these LOs and ASs

- In what way could the land and the river in the region be used more sustainably?

LO 2 The learner will be able to demonstrate geographical and environmental knowledge and understanding.

- AS 3 Explains how sustainable development could impact positively on people, places and environments.

Examples of tasks to achieve these LOs and ASs

- How will the implementation of sustainable development, such as reduced water consumption, help the people of the region?

Setting the Scene

This poster highlights human interactions with the Buffalo River. The poster provides an overview of the whole of the catchment for this river.

Dams

The catchment depicted here starts with the Maden Dam, Upstream of this dam is an original closed canopy forest - this means not much sunlight reaches the forest floor. This forest is home to indigenous trees, bushes and other plants. It is also a home to an entire ecosystem of birds, small mammals, reptiles and insects which are indigenous to South Africa and some may not be found in any other country in the world. So the preservation of forests such as these is very important. We want to protect our biological inheritance for our children and our grandchildren.

We can also use this forest to attract ecotourists who like to visit natural areas and watch the birds and animals. For example in Kruger, thousands of visitors come each year to see the elephants in the forest sanctuary. In this catchment ecotourists could fish in the dams, explore Sandile's cave and hike along the Amotola trail. Such tourists help South Africa earn valuable foreign exchange, create jobs and improve local infrastructure, hotels, restaurants, guest houses etc. All of this can help to reduce poverty. The forest also helps to ensure that the dam continues to fill up with water. The trees help to prevent mud and other pollution from reaching the dam. It prevents erosion. The forest helps to slow down floods that are caused by heavy storms, giving us time to warn people and move them out of the danger area.

This dam, along with all the dams along this river are very important water storage facilities. South Africa must store water in dams in order to ensure that we have enough water in our taps. The dams have to be big, as South Africa experiences many long droughts. This dam has cost millions of rands over more than 100 years to build and maintain. It is owned and managed by the Department of Water Affairs and Forestry on behalf of all the citizens of the country.

At Bransweg, local farmers are using the river to water their cattle. Cattle have to drink water to live (rather like humans) or else they will die. It is also important that cattle drink water of a good quality. Polluted water, especially water polluted with bacteria, can make them sick and even cause them to die. It is also important that cattle do not pollute the river water themselves. Cattle dung is full of bacteria (rather like humans) and will pollute the river water. Farmers need to ensure that their animals do not drink directly from the river, but rather from drinking troughs that are away from the river bank.

At Pirie Mission, there is a Working for Water team removing a species of tree known as a black wattle. The Working for Water Project is an inter-governmental / departmental project that aims to remove Alien Invasive Plants (AIPs) which are a problem in South Africa. Alien Invasive Plants, such as the black wattle, are plants that we do not want growing uncontrollably in South Africa. These plants are able to grow fast and spread very easily and they have taken over millions of hectares of land. AIPs were introduced to South Africa from other parts of the world. The black wattle for example originally came from Australia. Some were brought here as garden plants, others for firewood or wind-breaks. Then they started to spread and become a problem.

AIPs are unwanted plants (we can call them weeds) in South Africa because they use up our water resources (such plants remove much more soil water from the ground compared to indigenous trees), they push out indigenous plants, cause severe wild fires and make our land less productive.

Working for Water trains and pays previously unemployed people (especially the disabled and women) to remove these AIPs by a variety of means: mechanical, chemical, biological and even fire! Working for Water is helping to reduce poverty while they save the bio-physical environment. To date, the Working for Water Programme has won many environmental awards, including the prestigious Green Trust Award.

At Thembu, local farmers are pumping water from the river to grow their crops. This is irrigation. Commercial farmers are farmers who sell their harvest and do not only grow food for their family's needs. In this area irrigation is essential for commercial farming, as the rainfall is not enough to grow the crops. Commercial farmers sell their crops to supermarkets, food processors and perhaps even internationally. It is important to know how much water these farmers pump out of the river, because too much pumping can drop the flow of water in the river. This will cause aquatic life to suffer and perhaps even die. Worst still, it will make much less water for those people who live downstream. Commercial farmers also use artificial fertilizers, pesticides and herbicides. These chemicals tend to get washed into the river, thus polluting it. Even when these farmers plough their fields, they tend to pollute the river with the soil and silt that moves from the land to the river during the process of soil erosion. Soil erosion makes it difficult to farm after some time, as the soils become poor and the crops are not good. To keep the soils on the land, farmers should plough closer than 30 meters from the edge of a river and leave the natural vegetation to grow next to the river. This will stop the erosion of precious soil from the land. It will also keep the river safe from mud and other agricultural pollution.

In South Africa, irrigated agriculture is the biggest consumer of water country wide. Farming with crops and livestock can have a major impact on our rivers and dams, and they can also play a key role to protect the rivers.

Cropping

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