

FOR TEACHERS. ENVIRONMENTAL EDUCATION ACTIVITIES

Most of the PACE Action Sheets are aimed at anyone who wants to find out more about the practical techniques featured in the PACE film and book. However, this section is especially for teachers, among the most important and influential people in the world! What teachers teach children shapes the environment of the future.

Many of the Action Sheets cover techniques that schools and environmental education centres can use in special projects (eg. tree planting and energy efficient cooking) and promote in the wider community. As many national curricula already recognize, environmental education can be integrated into the teaching of many different subjects on the curriculum - an efficient and effective way to teach environmental awareness. This section presents teaching activities for use in language, geography, science and art classes. They can all be adapted to suit different age groups and reflect local environmental issues.

Environmental education can do the following:

- ✓ *It can provide skills that can be used to improve the environment*
- ✓ *It can increase our understanding of the environment*
- ✓ *It can develop a mass interest in conserving the environment*

ACKNOWLEDGEMENTS: The teaching activities presented here are reproduced with permission from the following sources:

Frontier-Tanzania (2000) *Environmental Education Handbook for Teachers*. Frontier-Tanzania Environmental Research Report 70. Kilombero Valley Integrated Environmental Management Programme. Supported by the National Lotteries Board, UK.

Frontier Tanzania (2002) *Resource Pack for Environmental Educators: Activities to Encourage Environmental Awareness for Forest Reserves*. Frontier-Tanzania Environmental Research Report 93. Society for Environmental Exploration, UK; University of Dar es Salaam and Forestry and Beekeeping Division, Tanzania.

More teaching activities can be found at the end of each chapter in the book Africa Our Home.

1. COMPREHENSION ACTIVITIES

Comprehensions are an easy way to teach various aspects of languages. They can also be used to teach Geography and Science. An exercise such as this can be adapted to suit different levels at school.

Simple comprehension

Simple comprehensions are easy to develop. Here is an example.

THE SOIL

The soil provides us with crops and trees. Crops cannot grow on bare ground. Without soil there would be no trees and without trees there would be no shade, no traditional medicine, no firewood, no building poles and no animals. The soil takes a very long time to form. It is made up of two things - minerals from rocks underground and organic matter from vegetation. The rocks of hills and mountains are washed down into the valleys by rain water. This releases minerals into the soil. When vegetation dies, it rots and the nutrients present in the vegetation go into the soil making it fertile. Small animals inside the soil help break down the organic matter (leaves, branches etc) into small pieces. As well as providing organic matter the trees protect the soil from rainfall. The leaves act like a roof and slow down raindrops. The roots of trees help the rainfall enter the soil. Vegetation also stops water channels from forming.

*Without trees there is no organic matter added to the soil so it becomes infertile. There is also no protection from the rain. Rainwater will hit the soil at a high speed causing the soil to break up. Instead of going into the soil the rainwater runs over the ground. With no vegetation to slow it down it soon forms channels and carries all the soil away. This is called **soil erosion**.*

Questions:

1. What two things help form the soil?
2. How do rocks contribute to soil formation?
3. How do trees contribute to soil formation?
4. What role do little animals in the soil play in soil formation?
5. Name three ways in which trees protect the soil.
6. What happens when there are no trees?

You can easily produce your own comprehensions based on the information provided in the PACE Action Sheets, book and film. Here are some suggested topics:

- Indoor Air Pollution (Action Sheet 57 Reducing kitchen smoke)
- Human Wildlife Conflict (Action Sheet 2)
- Marine Protected Areas (Action Sheet 71)
- Agroforestry (Action Sheet 35)

Advanced exercises

The ability to express an opinion is an important part of language. You can use a simple comprehension to develop these skills. Look at the following passage. Read this to pupils and then ask the questions below:

The people in the village used the river for all of their household needs. It was a good source of clean water. There was a man called Abdu who lived in the village and who needed some planks for his new house. Abdu knew that there were some tall mvule trees close to the river so one day he went to the river and cut down all of the trees surrounding it. A week later it rained and for the first time in twenty years the water in the river turned dirty and brown. Many children got sick after drinking the water.

Initial questions: (to ensure that the passage has been understood).

1. What was the name of the man in the story?
2. What type of tree did he want?
3. What happened to the children after they drank the water?

'Opinion' questions:

1. Why do you think the river became dirty?
2. Was it sensible for Abdu to cut down trees so close to the river?
3. How do you think you can protect your water supply?

In this section of the exercise try to encourage a discussion amongst the pupils.

Here is another example:

The poachers came from Iringa. They were armed with machine guns and drove a Land Rover. Over two weeks they killed six elephants. They took the ivory from the elephants but left the meat to rot in the sun. The local people heard about the poachers and reported them to the District Council. The District Council sent two Game Scouts to arrest the poachers.

Initial questions

1. Where did the poachers come from?
2. What did the poachers take from the elephants?
3. What did the local people do?

Opinion questions

1. Is this form of hunting sustainable?
2. What do you think about the action taken by local people?
3. What other ways can local people use to help conserve the environment?

2. INTRODUCING AND PRACTICING NEW WORDS AND SPELLING

These exercises can be used to introduce new words and improve spelling in any language lesson. Try these exercises with children and then develop your own. You can use these methods for different classes – simply make the words more or less complicated.

Anagrams / Mis-spelt words:

The following words have been deliberately mis-spelt. Spell them correctly. Clues are given to what the words are:

Swahili: *ihfdhai*

English: *cnnevsratio*

Clue: *What the environment needs*

Swahili: *mbsia*

English: *nloi*

Clue: *the biggest predator*

Picture cards

This activity requires a lot of preparation. You will need a pen or pencil and lots of pieces of card or paper. Cut the card into pieces the size of your palm. Divide the pieces of paper into two groups. Take one piece from each group. Draw a picture of an object related to the environment on one card and write the name of the object on the other. Do this until all of the cards have a drawing or a word on them. Potential objects to draw include – animals, trees, soil erosion.

Jumble the cards up and give them to the children. The task for the children is to match the pictures with the right words. You can also use the pictures on their own to check spelling.

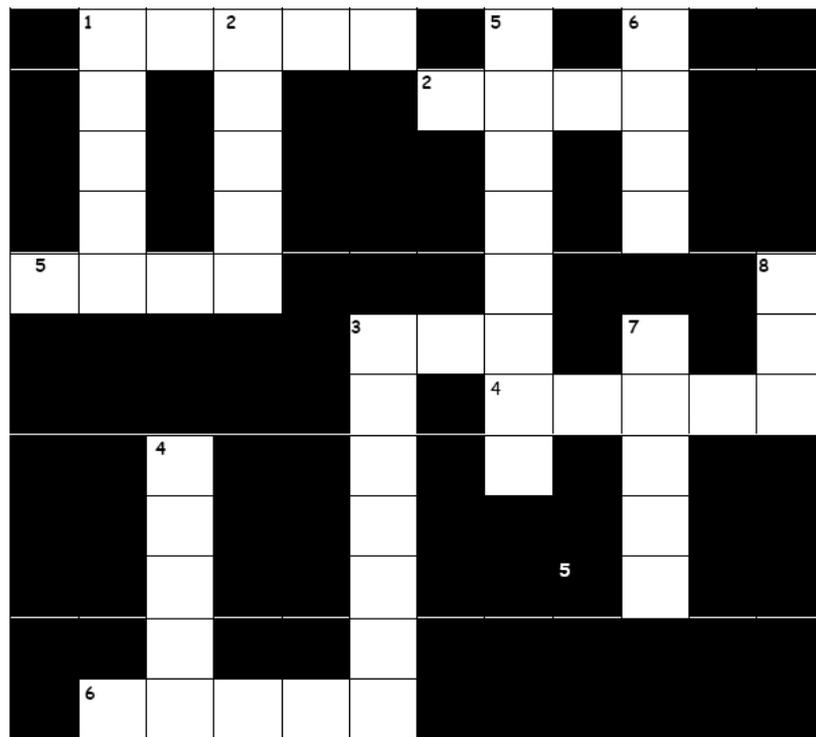
Alternatively, simply take a picture card and ask children how to spell the thing depicted.

Crosswords

You can make crosswords with an environmental theme to improve reading, spelling and crossword problem-solving skills.

Explain what a crossword is (or ask older children to explain), i.e. that the words fit together and that the answers are hidden in the clues.

Read the first clue as an example, and fill in the answer. Then show that any letters that go across another word must be in that word too and in the correct position. Complete a second clue if necessary. Distribute the crosswords. Two Swahili examples and answers are on the next pages.

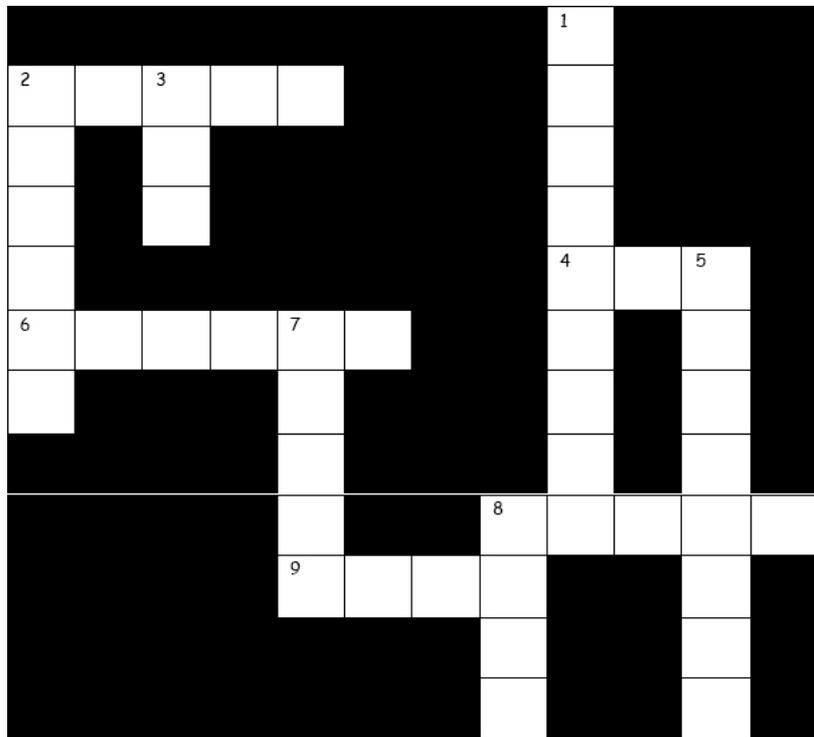


Across: (correct answers to crossword are in Kiswahili)

1. An animal in trees and caves making loud noises at night. (Hyrax)
2. This is necessary to cook with. (Fire)
3. You can get water from it. (River)
4. A bit like a human being, this animal lives in the forest. (Baboon)
5. A tree often planted to mark out forest boundaries. (Teak tree)
6. A bird that flies at night making a 'whooo' noise at night. (Owl)

Down:

1. A flying, hopping insect that birds like to eat. (Grasshopper)
2. A bit like a snake, but this animal has legs. (Lizard)
3. A tree type with very large smelly fruits we like to eat (Jackfruit)
4. The place where trees, plants and animals live. (Forest)
5. This animal moves slowly with its house on the back. (Snail)
6. This animal flies at night and likes to hang upside down. (Bat)
7. A small animal with whiskers and a tail. (Rat)
8. A large bird, that likes to swoop and catch live animals. (Eagle)



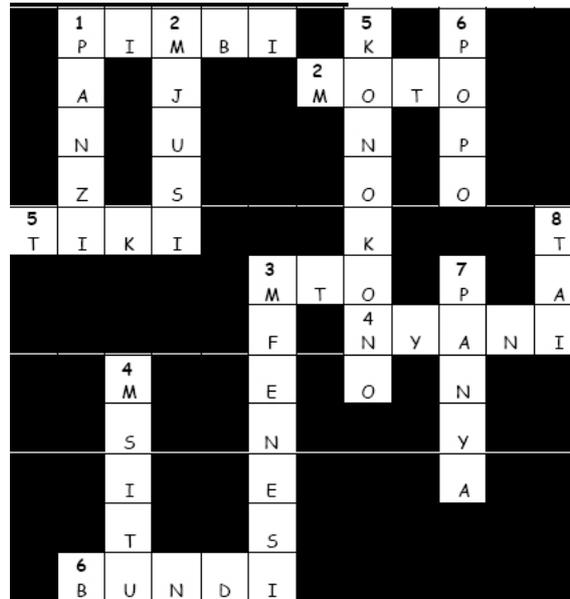
Across: (correct answers to crossword are in Kiswahili)

- 2. A small animal, known to like liquor! (Bushbaby)
- 4. A human being. (Person)
- 6. The practice of people growing food and cash crops. (Agriculture)
- 8. Animal used by people to carry things. (Donkey)
- 9. When a plant is small and gets bigger. (Regeneration)

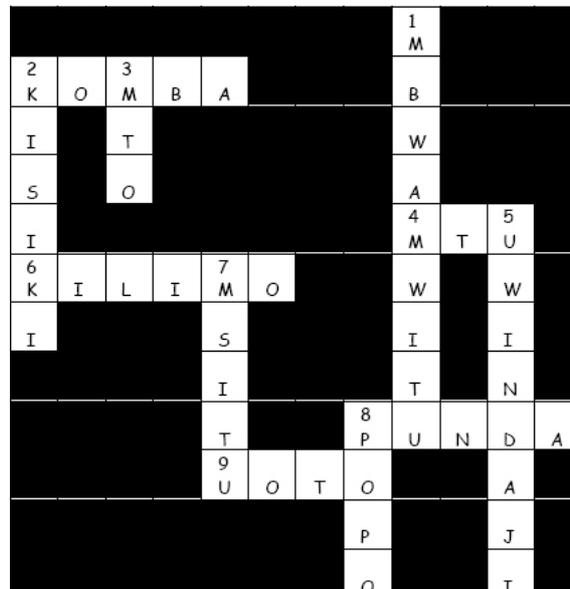
Down:

- 1. A type of dog that lives in the forest. (Wild-dog)
- 2. What is left of a tree after it is cut down. (Stump)
- 3. Water flowing in a definite channel. (River)
- 5. An activity that involves killing of animals. (Hunting)
- 7. The place where trees, grasses and animals all live. (Forest)
- 8. An animal that flies at night and hangs upside down. (Bat)

CROSSWORD 1 ANSWERS



CROSSWORD 2 ANSWERS



Wordsearch

Wordsearch activities improve word-recognition and memory skills. Two Swahili examples and answers are on the next pages, or you can prepare your own in English or other languages.

Show the children the Wordsearch sheet and explain that the words on the bottom are hidden in the grid. Using the example, show how the words can be found by looking for the first letter. Look for next word on list and show how it should be circled. Give out the Wordsearch sheets.

WORDSEARCH 1

Find the Kiswahili words from the list below in the grid.

When you find a word, circle it with a pencil, as shown for 'popo'.

p	o	p	o	m	m
a	j	u	a	o	l
n	a	m	i	t	i
y	n	t	a	o	m
a	i	o	n	j	a

popo (bat)

moto (fire)

miti (trees)

jua (sun)

mlima (mountain)

jani (leaf)

panya (rat)

mtu (river)

WORDSEARCH 2

Find the Kiswahili words from the list below in the grid. When you find a word, circle it with a pencil, as shown for 'bonde'.

b	u	n	d	i	o	d	r	a	t	k	l	m	m	n	b
o	v	w	u	e	h	u	n	i	m	a	w	i	n	g	u
n	l	l	o	u	j	e	r	j	k	i	m	a	g	u	n
d	k	j	r	m	a	j	a	n	i	w	p	l	t	a	y
e	o	a	u	i	o	d	k	v	n	a	l	s	i	u	v
j	k	t	m	t	o	t	i	l	y	d	f	k	y	m	m
t	u	m	b	i	l	i	o	a	o	n	e	b	m	l	a
s	p	a	t	s	s	l	w	k	n	s	h	g	m	l	u
h	e	n	k	n	y	n	b	e	g	a	h	y	e	l	w
y	p	f	w	y	p	a	n	y	a	v	u	a	a	u	a
b	o	h	k	a	n	o	u	g	n	b	t	g	m	m	u
k	o	r	o	n	g	o	s	n	y	u	k	i	f	b	h
m	s	y	k	i	p	e	p	e	o	a	h	k	y	e	a
s	b	a	a	u	o	a	b	v	k	i	p	a	n	g	a
i	w	s	h	y	p	y	f	y	a	o	g	m	v	u	a
t	h	o	n	d	o	h	o	n	d	o	m	g	u	h	o
u	k	i	l	e	l	e	t	p	c	h	u	r	a	l	i

bonde (valley)
kilele(noise)
korongo (crane)
mlima (mt.)
mbega (colobus)
panya (rat)
bundi (owl)
kima (blue mky)
majani (leaves)
mmea (plant)
ndege (bird)
popo (bat)

chura (frog)
kinyonga (chameleon)
mauwa (flowers)
moto (fire)
njia (footpath)
shamba(farm)
hondohondo(bird)
kipanga (eagle)
mawingu (clouds)
msitu (forest)
nyani (baboon)
tumbili(vervet)

jabali(rocky)
kipepeo(butterfly)
mbegu (seeds)
mto(river)
nyoka (snake)
upepo (wind)
jua(sun)
komba (bushbaby)
miti (trees)
mvua (rain)
nyuki (bee)
watu (people)

ANSWERS 1

p	o	p	o	m	m
a	j	u	a	o	l
n	a	m	i	t	i
y	n	t	a	o	m
a	i	o	n	j	a

ANSWERS 2

b	u	n	d	i	o	d	r	a	t	k	l	m	m	n	b
o	v	w	u	e	h	u	n	i	m	a	w	i	n	g	u
n	l	l	o	u	j	e	r	j	k	i	m	a	g	u	n
d	k	j	r	m	a	j	a	n	i	w	p	l	t	a	y
e	o	a	u	i	o	d	k	v	n	a	l	s	i	u	v
j	k	t	m	t	o	t	i	l	y	d	f	k	y	m	m
t	u	m	b	i	l	i	o	a	o	n	e	b	m	l	a
s	p	a	t	s	s	l	w	k	n	s	h	g	m	l	u
h	e	n	k	n	y	n	b	e	g	a	h	y	e	l	w
y	p	f	w	y	p	a	n	y	a	v	u	a	a	u	a
b	o	h	k	a	n	o	u	g	n	b	t	g	m	m	u
k	o	r	o	n	g	o	s	n	y	u	k	i	f	b	h
m	s	y	k	i	p	e	p	e	o	a	h	k	y	e	a
s	b	a	a	u	o	a	b	v	k	i	p	a	n	g	a
i	w	s	h	y	p	y	f	y	a	o	g	m	v	u	a
t	h	o	n	d	o	h	o	n	d	o	m	g	u	h	o
u	k	i	l	e	l	e	t	p	c	h	u	r	a	l	i

3. SENTENCE CONSTRUCTION AND GRAMMAR

These exercises can be used in any language lesson to improve knowledge of sentence construction and grammar, including tenses. You can easily make up your own exercises. Make them harder for advanced classes and easier for lower classes.

Slot cards

This exercise can be carried out on the board or on sheets of card. Using the words below fill in the gaps.

Butterflies are found in ————— and forest areas.
Different ————— have different patterns on their —————.
They ————— rotten fruit.

Missing words : *Eat, woodland, species, wings,*

This example can be used to introduce new words such as 'species'.

Look at the example below :

Yesterday Musa ——— into the forest.
He ————— down a large tree.
His wife ——— him that its was bad to cut down trees.
She ————— that trees help maintain the soil and regulate the climate.
Musa ——— not to cut down any more trees.

Fill in the gaps using words in the box below:

goes, told, tells, went, decided, cutting, cuts, decides, said, says

This example can be used to improve understanding of tenses.

Jumbled sentences

The words in the following sentences have been mixed up so that they are not in the right order. Children are asked to change the order of the words so that the sentence is correct.

not do batteries into river the throw
 stop help trees erosion soil
 trees benefits the to community provide
 community help can environment conserve the

Matching Tables

A The	Lions Buffalo Hunter Lion	Are Is Were Was will	eating walking hunt Hunting sleeping	Puku Grass In	Large numbers Today Tonight Yesterday
----------	------------------------------------	----------------------------------	--	---------------------	--

Take one word from each column and make three sentences, one in the Present tense, one in the Past tense and one in the Future tense. Tables like these can be used to improve understanding of tenses as well as sentence construction.

4. THE BIG BOOK

A Big Book is a language teaching resource that can bring benefits to all children in a classroom. One Big Book can be developed in a variety of different ways in order to teach any aspect of language.

Big Books have the advantage that they can be made out of local materials. All you need are some large pieces of card (the backs of calendars or old posters will also do) and some pens or pencils.

What is a Big Book?

A Big Book is simply a reading book. It has the following characteristics:

- It is big enough for all the children in the class to see it clearly
- The book consists of a simple story. However it is possible to develop the story if need be
- Pictures accompany the text. The pictures illustrate what the text is saying

Example:

Page TEXT

- 1 Amadu woke up one morning
- 2 He decided to get firewood
- 3 The firewood area was a long way away
- 4 Amadu was tired so he decided to cut down the trees on his farm instead.
- 5 His farm now has no trees.
- 6 After one month his supply of firewood ran out.
- 7 Amadu now had to walk to the firewood area to collect it.
- 8 After two months the rain started.
- 9 The soil on the farm ran away and the crops died.
- 10 Amadu was hungry for a year
- 11 The next year he planted trees all over his land.
- 12 The rain did not wash away his crops.
- 13 He had a supply of firewood and fruit.
- 14 Amadu was very happy.

Pictures to accompany this text are easy to draw. Each page should have a picture and the necessary text. Remember to leave room for extra text because you may want to develop the book at a later date.

How to use a Big Book

- Sit in front of the class
- Make sure everyone can see the text and the pictures clearly
- Read the text slowly
- Point to pictures to help explain the meaning of the words
- Ask questions as you go along to ensure that everyone understands the words

How to develop a Big Book

There are various ways in which you can adapt your Big Book to be suitable for different ages or to teach a different part of language. Here are some suggestions:

- (1) Introduce new words.
e.g. *He decided to get firewood / He decided to collect firewood*
- (2) Cover up individual words
e.g. *He _____ to _____ firewood (possible words – get, collect, decided)*
Ask children to put the words in the right gap.
- (3) Change the tense of parts of the story
e.g. *He decided to get firewood / He decides to get firewood*
- (4) Add questions
These can be based on the text :-
e.g.
What was the man called?
What did he decide to do?
Why did he cut down the trees on his farm?
Or they can be based on the pictures :-
What is this man doing?
What is happening here?
What is the man cutting?
- (5) Make the sentences easier or harder.
e.g. *He needed firewood (easy)*
He decided that it would be sensible to collect more firewood (more difficult).
- (6) Translate all or part of it and use it to teach English

Here are some potential titles for a Big Book. Think of some stories to go with them and make a Big Book of your own. Remember that the pictures do not have to be works of art, they just have to illustrate the text.

- The animals have a meeting
- Kazimoto saves the river from pollution
- Abdu the fisherman and the *whale*
- Adventure in the forest

5. THE INTER-RELATIONSHIPS BETWEEN LIVING THINGS

Knowing how animals and plants interact is an important part of Science curricula. The information presented in the PACE book on Living with Wildlife and Forests provides you with a lot of information about this. Here are some activities you can do:

What is the environment?

In order to introduce the word **environment** to young children try the following exercise. Ask children to look out of the window (or go outside into the school compound) and list everything they can see which is living. Encourage them to look closely at trees and leaves.

Now ask them to write down a list of all non – living things. Finally write up these two lists on the blackboard under the headings '**living things**' and '**non living things**'.

Ask the children if they can provide one word which describes all of the objects on both lists. Inform them that the word is 'environment'.

The environment of different animals

Ask children to name all of the things which form *their* environment. This should include: Air; rivers; trees; road; house; school; livestock (and many more things !). Write the list on the board under the heading:

My environment

Now ask to name all the things which form the environment of a bird. This will include: trees; air; fruits; insects; other birds; rivers; farms; houses. Write the list on the board under the heading:

The environment of a bird.

This can be extended to include fish (water; rivers; rocks; aquatic vegetation; other fish; frogs; insects). Write the list on the board under the heading:

The environment of a fish

When all the lists are complete, look at them together. Many things will appear on all the lists.

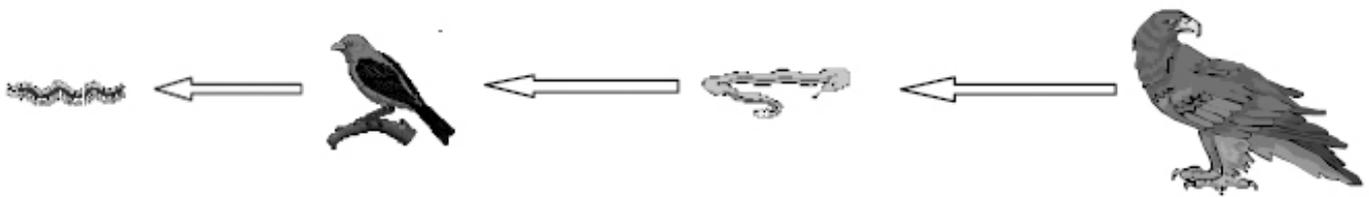
Use this to illustrate that **all living things use the same environment.**

This exercise can be continued to include a look at man's impact on the environment. For example 'river' is mentioned in all the lists. Ask the children to name some ways in which man affects the rivers. One obvious way is pollution. Ask the children what affect pollution of the river would have on the fish or the bird. Use this to illustrate that **the actions of man affect the environment and therefore all living things.**

Food chains and webs

Animals and plants are linked to each other because they eat each other. Because of this, you can say that a leopard is actually dependent on an insect for food. How can this be true? It is true because of **food chains**.

A food chain is illustrated below. The arrows indicate what the animals eat.



In this food chain the centipede is eaten by the small bird. The bird is then eaten by a snake which itself gets eaten by an eagle. Consequently you can say that the eagle is dependent on the centipede for food. Why? Because without the centipede there would be no food for the bird. Without the bird there would be no food for the snake and without the snake there would be no food for the eagle and it would die.

All food chains really start with the sun because this provides the energy for the growth of vegetation. For example a simple food chain could look like this:

Sun – grass – antelope – lion

This is a very short food chain. Other food chains are much more complex.

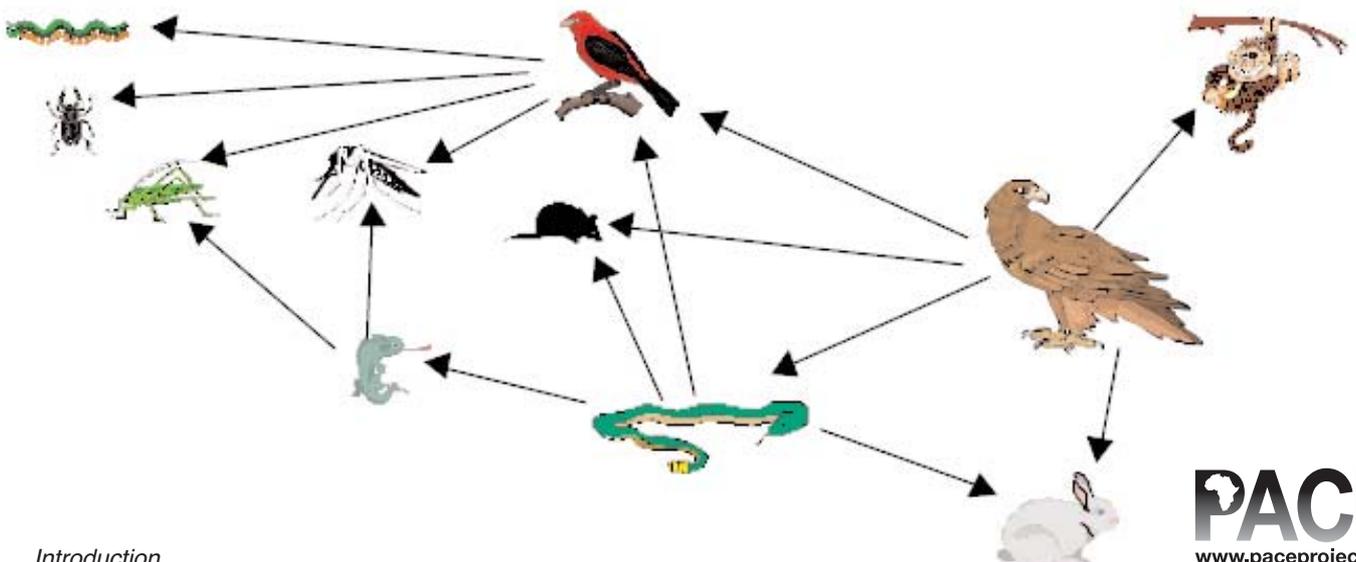
Sun – vegetation – insects – frog - snake – eagle

You will notice that as you progress along a food chain the animals get larger but less common. For example, there are millions of flies but not many leopards or elephants. The larger animals need lots of energy and so consume lots of food. As a result of their high demand for food the environment can only support a small number of them. However the smaller animals only need a little amount of food and so the environment can support great numbers of them.

Most predator–prey relationships are not as simple as the food chains mentioned above. In reality animals will eat several different sorts of food. For instance in the first food chain, the bird will eat several different kinds of insect, the snake will also eat rodents and the eagle will also eat monkeys and small birds.

So instead we have a set of relationships called a foodweb. It shows very well how living things are all inter-related to each other.

A food web



FOODWEB ACTIVITIES

Introduce the concept of foodwebs to children using the example on the last few pages. Once you have done this ask the children to join the following animals and plants in a food chain.

Draw a food chain to show how a leopard is dependent on an insect for food.

MONKEY

EAGLE

FRUIT

LEOPARD

INSECTS

SUN

GRASS

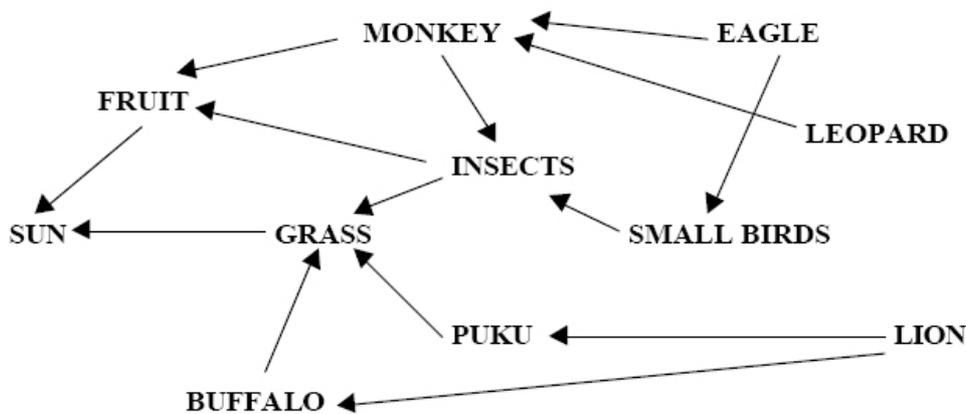
SMALL BIRDS

PUKU (ANTELOPE)

LION

BUFFALO

ANSWER:



To continue this exercise think of several different food chains which you would find in your local area. Draw pictures of these animals on small pieces of card. Divide the class into small groups and give each group a set of pictures. They must put the pictures in the correct order to make a food chain. Pass the sets of cards around the different groups so all of the children can carry out all of the activities. Following this activity the children can attach the pictures in each food chain together and add them to an environmental display.

Food webs can also be illustrated with the following exercise:

Think of a complex food web and write all of the names of the animals involved on small pieces of card. Select the same number of children as animals in the food chain. Give each child a card and several pieces of string. The children must connect themselves to all of the animals that they eat or which eat them. At the end of the exercise you can explain that this is a food–web.

You can then demonstrate what happens to the food chain if one of the animals or plants becomes extinct. Ask the child holding the card of an endangered animal to sit down and pull on the string leading to the animal which eats it. Anyone that feels a pull must sit down. What will happen to the animal below the one that became extinct? It will increase in number. What will happen next? The animal below will decrease in number. This activity illustrates how ecosystems exist in a delicate balance.

6. ENVIRONMENTAL STATISTICS

This sheet provides statistics relating to the local and national environment in Ulanga District, Tanzania. If possible, find statistics relating to your local area. It is possible to use such statistics for both Maths and Geography lessons.

Animals found in the different Divisions in Ulanga

The following figures were collected by Ulanga District Council. They show the total number of animals found in 5 Divisions in a survey in 1997.

Species	Lupiro	Mtimbira	Malinyi	Mwaya	Vigoi	TOTAL
Elephant	132	27	30	39	34	
Buffalo	225	91	66	0	510	
Hippo	0	21	14	23	1	
Lion	1	3	0	0	0	
Puku	876	302	194	0	0	
Hartebeest	31	3	8	11	6	
Sable	5	122	5	27	17	
Waterbuck	6	15	11	67	25	
Bushbuck	11	1	4	5	3	
Reedbuck	7	23	8	15	4	
Bush pig	0	17	28	14	10	
Baboon	174	343	114	293	198	
TOTAL						

MATHS

Get children to do the sums to create the following:

- A row to show total number of animals found in each Division
- A column to show the total number of each species recorded in Ulanga District

Children can also use environmental statistics to practice drawing graphs. For example below is a list of some of the graphs you can draw from the table above.

- Number of elephants found in each Division
- Number of different animals found in Mtimbira Division
- Pie graph to show distribution of elephants between Divisions

GEOGRAPHY

Give children a set of questions based on the data.

What animal is found in the largest numbers?

Which Division has the most animals? Which the least?

Animals and habitats in Ulanga District

The table below shows the number of animals seen in a wet season survey by Ulanga District Council in 1997. The number of animals seen in each habitat is recorded.

Animal	Grassland	Miombo	Forest	Ponds
Elephant	2	6	2	0
Buffalo	7	7	8	2
Hippo	0	0	0	9
Lion	1	1	0	0
Puku	10	0	0	0
Sable	0	15	0	0
Reedbuck	9	9	7	2
Bushpig	3	3	10	0
Baboon	2	10	9	0
Vervet	0	10	9	0
Hare	0	6	1	0
Hartebeest	1	9	0	0

How to use this data -

MATHS

Use the data to assist the teaching of graphs. Ask children to:

- Draw bar graphs for each main habitat showing which animals are found there
- Draw a pie graph showing the total number of animals seen in each habitat

GEOGRAPHY

Use the table, or graphs drawn by the children, to examine the habitat preferences of different animals. Give children a list of questions to answer - let them write their answers on paper.

- What habitat does the sable like?
- Which animals are ONLY found on the grassland?
- Which animal is able to live in a variety of habitats?
- Which animal likes the forest?

Once the children have answered these questions ask everyone in the class to try to think why the animals have different habitat preferences. Talk about the presence of water and food.

7. USING THE OUTDOORS

The activities here are suitable for English, Swahili, Art, Geography and Science lessons.

Poetry

Poetry is often part of language curricula. You can use the outside of the school to provide inspiration for poetry. Remember poetry does not always have to rhyme but you can help children by giving them a structure of a poem to start with.

Go to a tree in the school compound. Ask the children what different parts make up the tree (*roots, bark, trunk, branches, leaves etc*). Now ask them to describe the different parts of the tree, encourage them to touch and smell the tree - this might help them describe it. Now provide them with a structure for a poem. Explain that they just have to fill in the missing words. An example of a poem structure is provided. Some words which would make this into a poem are also suggested, but it is up to the children to suggest the words which will go into the gaps..

My roots hold on to the earth like (strong hands)
My leaves sway in the wind like (birds)
I am surrounded bybark which protects me from disease (rough)
Atrunk holds me together (strong and steady)
Strong and alive, I am part of the environment
I AM A TREE

Describing environmental objects

The ability to *describe* is an important part of language. Here is a simple and fun way to develop description skills in the classroom.

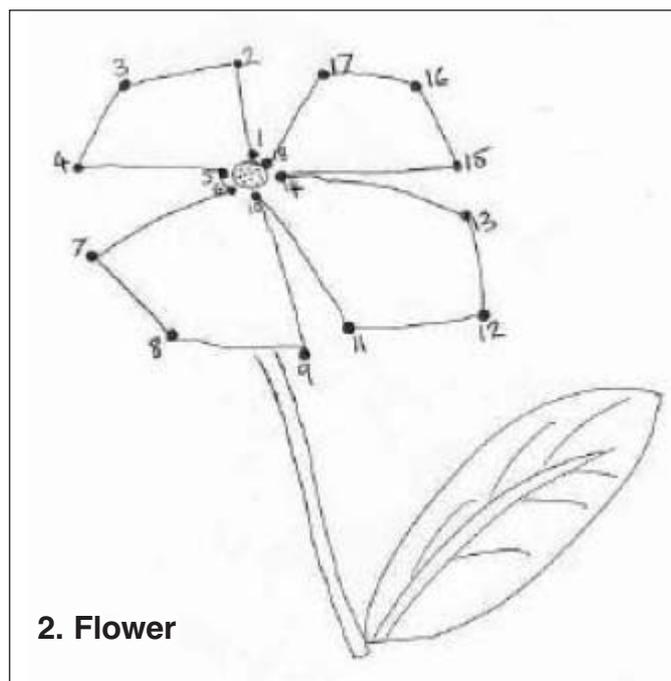
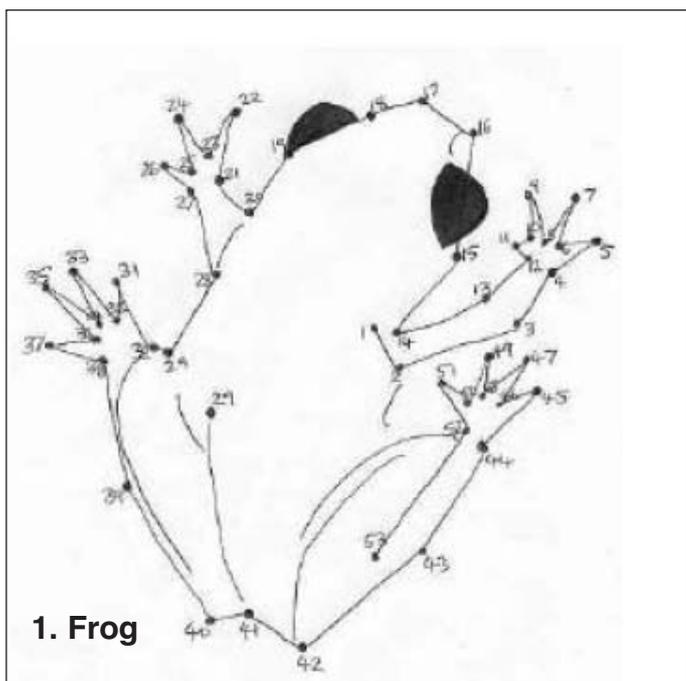
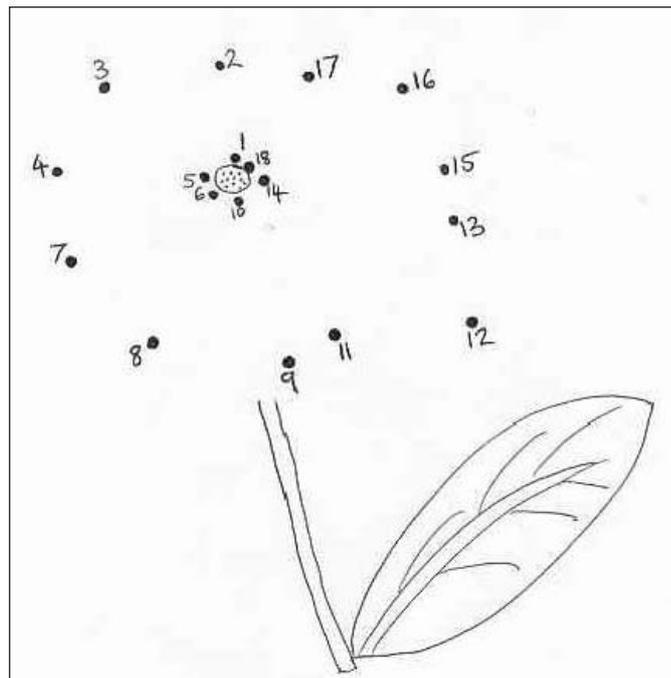
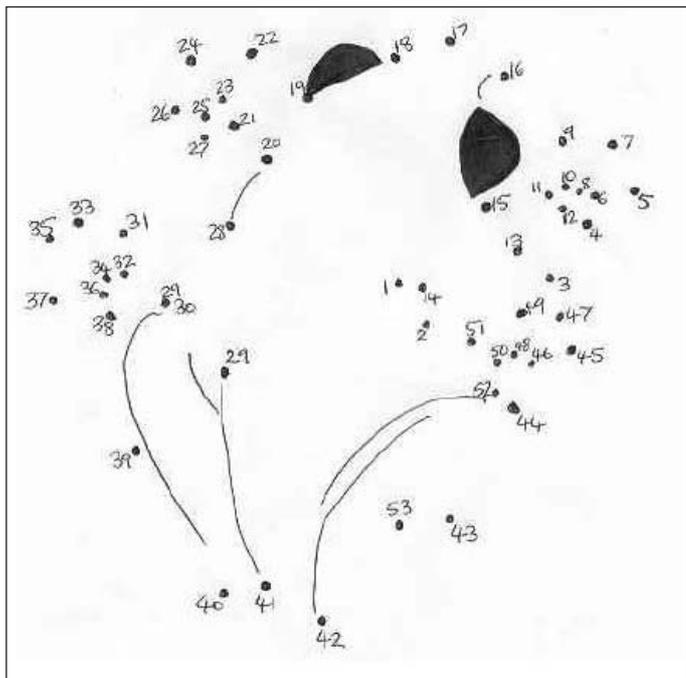
Collect a variety of environmental objects - soil, leaves, seed pods, fruits, stones, feathers, fur - and put them into a bag. Do not let children see the objects. Instead they must put their hands into the bag and must feel the different objects. Encourage the children to suggest lots of words to describe what the objects feel like. When they have suggested some words ask them to guess what the object is. It is important to remember that the language lesson part of this activity is the descriptions provided by the children. The guessing of the object just provides a bit of fun to make the lesson more enjoyable.

Variation: Play sounds on a tape so the children draw what animals they can hear within a 5 min (or given) period. Then go through the tape again commenting when sounds are heard (writing/drawing on board to illustrate).

Art

Here are some ways to improve art teaching through the environment:

- (i) Collect lots of different leaves. Stick them onto card to make a collage.
- (ii) Make a 'Stop Pollution' poster. Collect bits of rubbish and stick them on a piece of card with a slogan.
- (iii) Encourage children to produce environmental poster based on an issue examined in a lesson (e.g. human wildlife conflict, forests).
- (iv) Dot-to-dot: Also helps with counting numbers! Prepare dot to dot pictures of animals and plants like those below. Hand them out to the class. Explain that the children should join the dots in numerical order, or with younger children, direct the children to call out the numbers in order as they fill them in.



Discovery Table

To increase children's awareness of nature that surrounds them, collect various natural items from the local environment: eg. animal skulls, snake skin, fur, shell, seedpod, bark. Arrange them on a table and ask children to say what animals/plants the items come from.

Variation: Children could collect their own items to make their own discovery tables, perhaps during the Environmental Trail activity described below. They could draw pictures of the animals/plants that the items came from and think about characteristics of those items.

Environmental Trails

Around your school you can find lots of examples of issues which are in the Geography and Science curriculum. Perhaps you can find the following within a 100 metre area of your school:

- Example of soil erosion
- Different types of trees
- Insect life
- Pollution
- Man's impact on the environment

An environmental trail is a fun and stimulating way to learn about these issues.

What is an environmental trail?

A trail is simply a route around the school compound (or other area). The route follows set points where children must carry out a short activity. To get to each point the children are given clues. For example you could start at a classroom. The children are given a clue which tells them how to find the first point. At the first point the children have to carry out an exercise of some sort. They are then given another clue which tells them how to get to the next point (etc). Once at this point they carry out another activity. Some examples are given below:

Clue 1: Walk North West for 13 paces

Activity 1: Find the national tree of your country. Write down the uses of this tree.

Clue 2: Walk to the tree with the red leaves

Activity 2: Count the number of insects that you see on this plant

Clue 3: Walk in this direction until you find a bottle

Activity 3: Examine the area of soil erosion. Name 3 causes of soil erosion. What can be done to stop this erosion?

When the children get back to the classroom you can follow up many of the activities carried out on the trail. For instance you can use the foodweb activity above to continue an investigation into the inter-relationships between living things.

This activity can also be used to teach about directions and measurements. You can use it to introduce the compass - you can draw a simple compass in the sand and ask children to walk in a certain direction. Children can be encouraged to measure objects such as trees. Remember, to measure an object you do not need a ruler or tape measure. You can measure using any other objects. The circumference of a tree, for example, can be measured in hands, sticks or string.

This sort of activity also encourages children to interact with the environment. It can help increase powers of observation, after all children have to look for things. They can actually start *seeing* things that they never saw before!

Variation: Get children to collect signs of wild animals and plants in the school grounds. They can collect any dead bark, feathers or fur, and draw pictures of any living creatures they find. If you have magnifying glasses, specimen pots or sound-recording equipment, then you may want children to use these. Reassemble to discuss what was found. Back in the classroom, you could draw maps of the schoolgrounds and mark your findings. This activity could be an opportunity to introduce more technical scientific terms to the environmental trail, e.g. invertebrates/vertebrates.

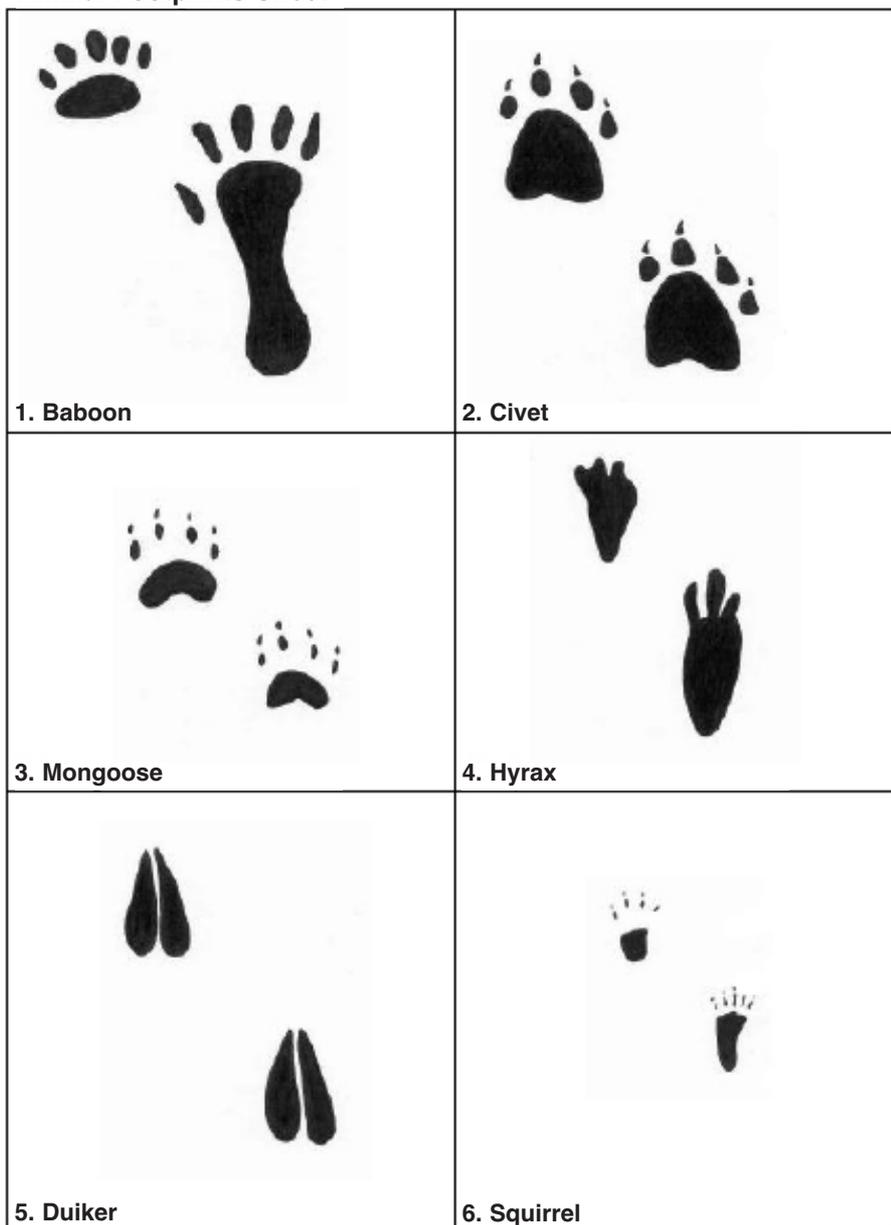
Alternatively, you could change the emphasis of the trail from natural signs to looking for signs of man's uses of/impacts on the environment. Examples of impact may include: burning, cultivation, water taps, brick furnaces, grazing, medicinal uses of trees. This could lead onto discussions on environmental concerns back in the classroom.

Animal Footprints

Use a wildlife reference book to make a set of pictures of animal tracks like that below. Then:

1. Play a simple class game by holding up the track and asking which animal would be likely to make those prints, or play a simple matching activity with cards showing animals and tracks.
2. Make a classroom display called "What makes me?" in which the pictures of the tracks can be flipped up to reveal the animal that made it
3. Use as a springboard for story-writing.

Animal Footprints Sheet



Animals and their Habitats

This activity aims to increase children's awareness of animals and their natural requirements. You can adapt it to reflect the wild animals and habitats found where you live.

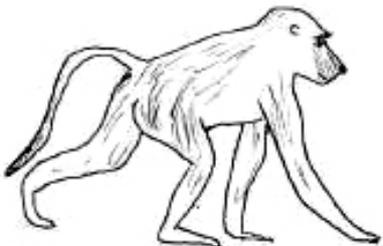
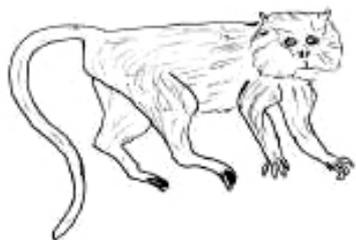
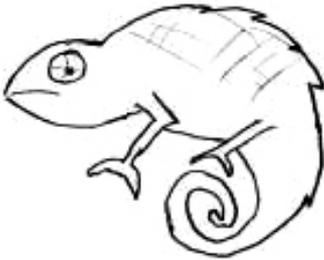
Use a wildlife reference source to make cut-out pictures of nocturnal and diurnal animals. The animals on the next two pages are from the forests of East Usumbara Mountain in Tanzania. Some of them may also be found in forests near where you live. Use the pictures, along with the blackboard as follows.

1. Explain the term 'habitat'. Discuss where we live and what we eat.
2. Then ask the children to think of an animal that needs the forest to live in.
3. Take a cut-out of that animal and show it to the class. Ask them to determine whether this animal is awake in the daytime or whether it is awake at night time (diurnal or nocturnal).
4. Divide the blackboard into two halves with a sun drawn on one half and a moon on the other. For each animal discussed, fix the cut-out on either side of the board using tape, depending on whether the animal is diurnal or nocturnal.

Variations:

- a) Repeat exercise, but place animals according to habitat, e.g. in forest habitat or grassland habitat, writing these habitat headings on the board.
- b) Teach children about food chains by asking the children what an animal might eat and what might eat it. Arrange the cut-outs on the board in the form of a foodweb.
- c) Encourage the children to imitate the noise of an animal or mimic the way that it moves etc. Ask the children to arrange the cut-outs themselves.

Pictures of Daytime Animals (diurnal)

 <p><i>Baboon</i></p>	 <p><i>Butterfly</i></p>	 <p><i>Cricket</i></p>
 <p><i>Eagle</i></p>	 <p><i>Snake</i></p>	 <p><i>Frog</i></p>
 <p><i>Colobus monkey</i></p>	 <p><i>Hornbill</i></p>	 <p><i>Person</i></p>
 <p><i>Squirrel</i></p>	 <p><i>Weaver bird</i></p>	 <p><i>Skink</i></p>
 <p><i>Blue monkey</i></p>	 <p><i>Chameleon</i></p>	 <p><i>Snail</i></p>

PICTURES OF NOCTURNAL ANIMALS



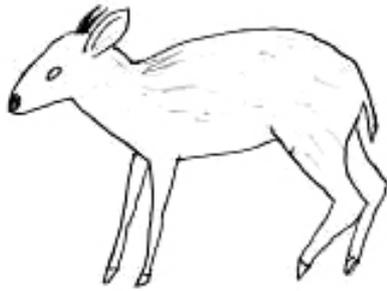
Bat



Shrew



Honey badger



Duiker



Genet



Tree hyrax



Owl



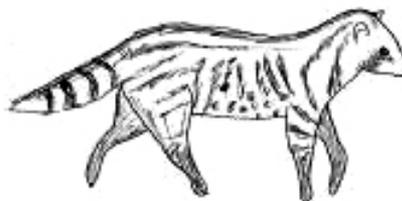
Mouse



Bushbaby



Bushpig



Civet



Hedgehog

8. ENVIRONMENTAL QUIZ

This quiz was designed for the schools near to the Usumbara Mountains of Tanzania. If you decide to use it with a class, you may want to change the questions to make them more relevant to your locality.

Read the following questions

There are TWO wrong answers but only ONE correct one.

Decide which answer is the right one and circle either a, b or c using a pencil.

- 1. Why should we not wash our clothes directly into the rivers and streams?**
 - a) Because we like our clothes dirty.
 - b) Because the soap we use will pollute the water.
 - c) Because we don't like getting our hands wet.

- 2. What happens to a plastic bottle or bag if it is thrown on the ground?**
 - a) It turns into soil.
 - b) It helps the plants to grow.
 - c) It stays there forever.

- 3. What should we do with food waste?**
 - a) Bury it to make compost.
 - b) Burn it to make a big bonfire.
 - c) Throw it on the ground around the house.

- 4. How can we get wood for building without illegally destroying the forest reserves?**
 - a) By buying wood taken from another forest reserve further away.
 - b) By planting tree nurseries in our village.
 - c) By only taking wood from the middle of the forest reserve.

- 5. How do forests help to regulate the weather?**
 - a) Without trees, the sun wouldn't shine.
 - b) Trees stop it from snowing.
 - c) Trees enable clouds to form, so that rain can fall.

- 6. What is bad about old batteries in the soil?**
 - a) Worms might trip over them.
 - b) They make plants grow quicker than normal.
 - c) They leak dangerous chemicals into the soil, poisoning crops and water supplies.

- 7. Why is it important to watch over fire on farms carefully?**
 - a) Because it might burn out of control.
 - b) Because it's nice to look at.
 - c) Because we don't do it very often.

Which of the following answers is INCORRECT?

Out of the following answers FOUR are correct and just ONE is incorrect. Circle the INCORRECT answer (either a, b, c, d or e) using a pencil.

8. Forest Reserves are important because:

- a) They are the source of most of our available water that we need every day.
- b) They are a home for unique plants and animals not found anywhere else in the world.
- c) They contain rare plants that we sometimes use for medicines and for traditional customs.
- d) They can be used by us to collect dead wood to use for our cooking.
- e) They can be used by us to cut down trees for carving and building and for hunting animals.

9. Why should we keep our homes and villages tidy and litter-free?

- a) To help prevent the spread of diseases.
- b) To make our village better at football.
- c) To reduce the number of rats and other vermin around our homes.
- d) To make us proud of our well-kept village.
- e) To improve the quality of our soils and streets.

10. Why is it important for us to protect our water systems?

- a) So that we have enough water to drink all year round.
- b) So that our cattle and goats have water to drink.
- c) So that other villages don't have any.
- d) So that we have clean water that makes us healthy.
- e) So that we can water our crops when it's dry.

A few more questions that you could talk about at school...

● **How could you make your village litter-free?**

Perhaps you could place bins at school/other public places. Use bags made from natural fibres etc.

● **Where should you put non-recyclable rubbish like plastic items and old batteries?**

In a designated village pit well away from water supplies and farms.

● **Do you know how to plant a tree?**

It needs good soil and plenty of water to start it off.

● **How can we improve our clothes washing methods?**

We can take water away from the river in buckets and pour soapy water into the ground so that it does not contaminate our drinking water (or other villages' drinking water further downstream).

Answers

1 b, 2 c, 3 a, 4 b, 5 c, 6 c, 7 a, 8 e, 9 b, 10 c

9. PLAY THE 'CLEAN WATER' BOARD GAME

Suggested age group: 12+

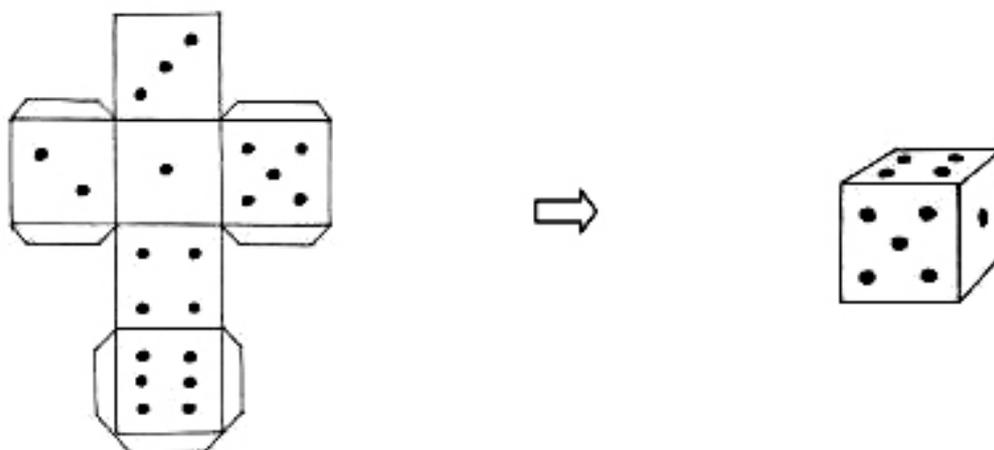
Aims: For children to think about issues that affect water quality and to reinforce in them the importance of keeping water sources clean.

Resources: Board game (see next page), one die, counters (e.g. stones, soda tops)

How to play:

1. First discuss the need for clean water. Ask children what we use water for (e.g. for us to drink, to cook with, wash with and also for our animals and crops).
2. Show them the board. The idea of the game is for children to learn about issues that damage water quality as well as ways that these issues can be avoided. The child encounters these issues as he/she moves down the board. The START position represents the 'upstream' water source, and the FINISH is the point 'downstream' where water is taken for use in the village.
3. Two or 3 players set their counters at the START.
4. The first player rolls the die and moves forward the number of squares as indicated by the die. If the player lands on a blank square, he is to stay there until his next go. If the player lands on a square with text, he is to read the text and move his counter forwards or backwards according to what is written, the player's go finishes when he lands on a blank square or passes the FINISH.
5. Each player takes it in turns to roll the die. The first player to reach or pass the FINISH is the winner.

To make a die, draw this template onto card, and cut around it. Fold all of the straight lines and glue into a die shape.



'Clean Water' Board Game

		START		
Crops watered early morning to reduce water loss. Very good. Move on 4 spaces	Short rains didn't come – stream is dry. Very bad. Go back to START and roll again.	←		
↓				
	Too much water taken from stream for farms. Very bad. Go back 3 spaces.	→		Leaking pipe fixed – more water in stream. Very good. Go forward 5 spaces.
				↓
	←	Cows making water very dirty. Very bad. Go back 2 spaces.	Leaking pipe wasting water. Very bad. Go back 3 spaces.	Pool dug next to stream for cows to drink from. Very good. Go forward 4 spaces.
Women washing clothes in buckets away from stream. Very good. Go forward 4 spaces.				
Women washing clothes in stream making water soapy. Very bad. Go back 1 space.		Villagers move toilet away from stream. Very good. Go forward 4 spaces.		↓
				Toilet built too close to stream. Very bad. Go back 3 spaces.
	Healthy fish in stream. Very good. Go forward 1 space.	←		Frogs able to breed in nice clean water. Very good. Go forward 3 spaces.
FINISH				

10. ORGANISE AN 'ENVIRONMENT DAY'

Take the opportunity for your school to help improve environmental awareness within the community

Ideas:

1. Choose a day in the calendar (perhaps to coincide with World Environment Day). **World Environment Day** (WED) was established by the United Nations General Assembly in 1972. WED is commemorated each year, with an international exposition during the week of June 5.
2. Have a brainstorming session to come up with ideas for the day. Some ideas that might work well are:
 - Compose and present an environmental song
 - Perform an environmental poem/rap
 - Produce a play highlighting environmental issues
 - Run a poster/storywriting competition
 - Invite a guest speaker
 - Tree planting

GOOD SOURCES OF ENVIRONMENTAL EDUCATION MATERIALS

ACTION

Postal Address:

P.O. Box GT1274, Graniteside, Harare, Zimbabwe

Physical Address:

Mukuvisi Environment Centre

Cnr Glenara Ave Sth / Hillside Road Ext, Hillside, Harare, Zimbabwe.

Tel: 263-4-747213/74

Fax: 263-4-747409

Email: action@action.co.zw

Website: www.action.co.zw

Posters on animals and ecosystems;

Magazines on:

Agroforestry

Water

Population

Zambezi Action Plan

Living Deserts

Animals in Action

All Equal All Different (Rights)

Campfire

Lighting the Campfire

Drugs

Planting Trees

Disability

Safety & First Aid

Ecosystems

Wildlife

Clean & Beautiful

Soil

Pesticides

AIDS - finding out the facts

AIDS - what we can do

Growing up

Action Pals - Raising Children
to be their best

Action Pals - Tomorrow is ours

OUTREACH/TVE

P.O. Box 820

Shelburne, VT 05482

U.S.A.

<http://www.outreachworldwide.org/>

Email: tveoutreach@adelphia.net

Resource packs on: Agroforestry, Soil Erosion, Soil Degradation, Soil improvement in the Tropics, Breeding crops, Genetic diversity and biodiversity

ERP Education for Rural People - Toolkit
http://www.fao.org/sd/erp/ERPtktoolkit_en.htm

This ERP Tool kit provides education and training materials for rural teachers, instructors, trainers, parents, researchers, extensionists and others involved in formal and non formal education for rural people. It could also provide tools for self studies.

Internet for Environmental Education Project (INforeEP) A superb website from the Botany Department of The University of the Western Cape providing a range of resources and services that supports the field of environmental education in the Western Cape as well as the rest of South Africa. These include:

- Educator Resources
- Learner Resources – The *Enviro Facts* page under *South African environment* consists of 60 fact sheets covering a broad range of environmental issues.
- Enviro-Directory
- Discussion Forum
- Links

<http://www.botany.uwc.ac.za/inforeep/welcome.htm>

ShareNet

ShareNet is an informal network of individuals and organisations collaborating to produce environmental education materials. ShareNet has also developed educational packs to support the four main environmental weeks of the year, namely water, environment, marine and arbor weeks. All Share-Net resources are made available, copyright-free, for educational purposes.

<http://www.wildlifesociety.org.za/sharenet.htm>

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Fax: +27 (0) 33 3304576
E-mail: sharenet@wessa.co.za

ECOSCHOOLS PROJECTS

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Dr Dorcas Otieno
The Kenya Organization of Environmental Education
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Kenya
Tel./Fax: +254 20 522503
e-mail: dorcasotieno@koe.org
www.koe.org/ecoschools.htm

South Africa

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Wildlife and Environment Society of South Africa

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e-mail: ecoschools@wessa.co.za

www.wildlifesociety.org.za/educoschools.htm