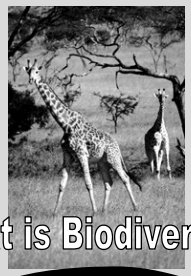
Eco-Logic



What is Biodiversity?

"Finding out & Reporting"

Learners discover principles by which plants and animals live to support ecological sustainability

Grading:

Time:

Place: Inside

Group size: Five groups

Activity Outcomes:

Learners are able to:

- describe some of the principles by which organisms live
- identify ways in which plants and animals are adapted to their environment
- adopt ways in which they can arrange their own lifestyles to contribute to ecological sustainability

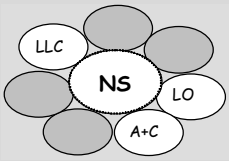
Assessment:

- Group assessment of individual's contributions
- Educator evaluates posters and each group's understanding of their specific ecological principle

Skills:

- Implementing prior knowledge
- Interpretation of principles
- Respect for living organisms

Learning Area links



Background

There are a number of ecological principles which characterise the ways in which plants and animals live. These principles not only teach us about how plants and animals are adapted, but also how we can rearrange our own lifestyles to support **ecological sustainability**. We can learn important lessons by studying plants and animals in nature.

Activity Guidelines

Needed: *Poster paper, koki pens, information cards (See pp A31 and A32)*

- Ask learners to give examples of certain functions performed by animals and plants. If necessary, prompt them by referring to well-known organisms - trees, earthworms, fungi, etc.
- Divide learners into FIVE groups. Each group gets an information card, each of which contains details of a specific ecological principle of sustainability.
- Ask each group to study and discuss their principle, make a **summary** on poster paper and report back to the group after ± 15 minutes.
- They should include the following:
  - **Good examples which can be used to illustrate the principle** (e.g. for the fact card "CONSERVATION": How birds use resources sparingly and don't gather more than they need for survival.)
  - **Some ideas on how to understand the concept.** (Make use of the principles of outcomes-based education eg. making judgements, critical thinking, doing research, making decisions, self-discovery, analysing and interpreting data.)
- Encourage groups to criticise each other's contributions and to suggest other innovative ideas.
- Then discuss in groups the following:
  - **How humans often disregard these principles** in modern lifestyles.
  - **Whether these principles can serve as guidelines** for our own living

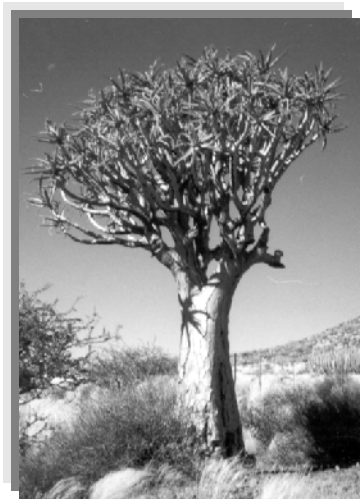
- These posters should be kept for record purposes as part of learners' portfolios or to provide case studies.

See Teacher Guide 2 pg 4-7.

Variations

Writing a report

Let each learner choose an indigenous animal or plant species and write a report on how this organism contributes to ecological sustainability. Follow the principles on the information cards as guidelines.



Aloe dichotoma

Guidelines for report writing:

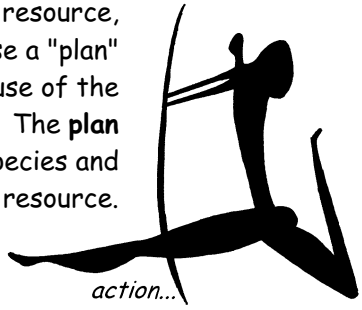
A report is a written reflection of the research and contains the following:

- the names of the people who did the research;
- an overview of the problem;
- a short explanation of the research done;
- the aim, method, summary of the results, conclusions;
- the recommendations made;
- a resource list.

A report should be as short and as clear as possible. It is not an essay: use headings and sub-headings which are numbered.

Devising a plan

Divide the class into groups. Let each group choose a local resource, such as a stream, a park or a forest. The group should devise a "plan" (between one and three pages) for ensuring sustainable use of the resource and take an active roll in the actual process. The **plan** should address sustainable use for people, for other species and threats to the resource.



Information cards for Eco-Logic

Stick these on cardboard and cut out…

Recycling

One of the main reasons undisturbed ecosystems are so efficient and one of the reasons they persist is that they recycle nutrients, water and other materials vital to the continuation of life, using them over and over again in an unending cycle. On Planet Earth, new generations arise from the remains of previous ones. Future generations will arise just as surely from the molecular remains of the present. A carbon atom in your hand may well have been part of a dinosaur that lived on earth 100 million years ago. That same atom will remain long after you have passed away, becoming part of other living things that follow you in the coming millenia.

Renewable Resource Use

In nature, organisms subsist principally on renewable resources, a fact also responsible for the sustainability of natural ecosystems. The lessons for learners of the Life Sciences is that the sun (a massive non-renewable resource) provides energy to plants which, in turn, generate organic food molecules that nourish the entire living world. Life persists thanks to the sun and four renewable resources: air, soil, water, plants and biodiversity.

Population Control

Ecosystems also endure because the species within them are subject to some form of population control. In most species, numbers are regulated by external factors - for example, extreme weather, food shortages, predation, competition and other natural forces. Other species control their populations through elaborate internal mechanisms. In wild dog packs, only the dominant male and female breed, a feature that helps to hold the population within the carrying capacity of the territory.

Conservation

Ecosystems persist in large parts because organisms use resources efficiently and generally use only what they need. Robins don't build supplementary nests to store all their "stuff". They don't move to bigger nests to accommodate years of accumulated "things". Countless examples can be found in the plant and animal kingdoms to support the importance of efficiency in the survival of the fittest.

Self-healing

Natural ecosystems persist because they are regenerative or self-healing. Through the processes of succession, ecosystems repair damage caused by natural disasters like fires, hurricanes and mud-slides. Fynbos areas, for instance, are adapted to recover quickly after fires; in fact, these ecosystems need fires in regular cycles in order to rejuvenate themselves. And ecosystems can even recover from many forms of human damage.