

Playing with plants, learning for life

Ana Raquel Barata, Alexandra Escudeiro & Maria Amélia Martins-Loução

Lisbon Botanic Garden Education Office, University of Lisbon, National Museum of Natural History, Botanic Garden, Lisbon, Portugal

Education for sustainability is now a main subject at international summits throughout the world as it is considered an essential way to guarantee sustainable life quality and Nature conservation.

The Botanic Gardens primal purposes for botany studies and maintenance of plant collections represent nowadays important objects to perform education for sustainability and biodiversity conservation. Educational activities at Botanic Gardens demonstrate how plants can be a learning tool to promote ecosystems conservation and achieve sustainability as its collections represent an important stock for biodiversity. This biological richness within urban centers allows children to experiment, see and touch different plants from all over the world and therefore better understand its threats and the need to promote its preservation to achieve sustainability (Avery 1971).

These collections promote education about plant diversity, plant relations with the environment, importance for the mankind and ecosystems, to teach about native plants, about threats for plant biodiversity and the need to preserve the environment locally and throughout the world (Willison 2003).

The Botanic Garden of Lisbon is located at the heart of the capital representing not only an important green area within the urban net but also historical, cultural and scientific knowledge about plants, its importance, ecology and current threats.

In 2004, the Education Office of the Lisbon Botanic Garden belonging to the National Museum of Natural History created a new concept: the school holiday courses. These courses aim to offer the possibility for children to occupy their free time within an important educational environment such as Botanic Gardens.

Assuming that only knowledge promotes behavioural changes to develop ecological attitudes (Scoullou & Malotidi 2004), these courses use children free time to play pleasingly and learn smoothly the basics of plant ecology and conservation, aiming to achieve the practice for sustainability. While playing with each other children are invited to experiment, create and learn about a chosen theme that concerns plant ecology, environment and biodiversity preservation in a beautiful and cultural background such as the Lisbon Botanical Garden (Figure 1).

In order to motivate children to repeat the courses, week themes are always different within plant ecology and conservation subjects (eg. Flowering and Pollination; Plants and Animals: living together; Caring for Nature: Caring for Life; Native Plants Preservation).

Activities programmed on a theme allow children to learn about plants and become familiar with the Botanic Garden in a weekly program occupying elementary school students' free time, working on sustainability concepts, reusing and recycling materials through games, art work and theatre plays.



Figure 1

Courses are composed by two different class ages, each one with 15 children (4-6 and 7-13 years). The weekly themes are similar to both groups but activities and their evaluation are adapted to children's age. Courses are programmed concerning specific objectives and activities for each day assuming that the assembly of results establish the week context and general objectives within the theme. During the course children are also taught how to recycle garbage. Each day starts at 9h00 a.m. with games about plants which allow children not only to learn about the course theme but also to get acquainted and to know the Garden; at 10h00 a.m. weekday activities take place; at 17h00 p.m. activities end and parents arrive.

Guidelines about plants and environment preservation within the world and the Garden are presented just on Monday morning. Afterwards children are taken for a complete tour through the Botanic Garden regarding the weekly theme and asked to collect plant materials to use at the afternoon art workshop. Children are warned to collect fallen plant parts only, in order to keep Garden's biodiversity. Art workshops aim to exhibit children's creations about the theme within the classroom which are to be used as props for last course day play presentation. On Tuesday the activities aim at raising nature conservation awareness. Therefore, children learn about compost making, paper recycling to use in herbariums as well as to reuse materials in art work. On Wednesday and Thursday children are invited to work in groups creating a story about the weekly theme and reusing materials to construct props and scenario sets. On Friday children carry out experiments using plant materials and the microscope to observe different structures concerning the weekly theme (eg. thorns in Mediterranean plants). Each course ends with an evening play presentation to parents, family and friends about the theme discussed during the week (eg. Native Plants Preservation).

Children may repeat courses as themes are different though interconnected but always targeting to raise conscience about plant ecology, current environmental threats and sustainability.

The use of free time in different learning activities such as painting, modelling, playing pedagogical games or presenting plays involving parents and family has shown very good results at the evaluation of the activity. Questionnaires are made to the older group before and after each course to evaluate acquired knowledge on the course theme, attitudinal changes based on

sustainability principles and satisfaction on doing the course. Parents also answer a part of the questionnaire to show their level of satisfaction and confirm changes on knowledge and/or attitudes within the children and family towards the course theme and objectives (Stokking et al. 1999).

As for the younger group, they are asked everyday to draw what they have done and learned about the week theme. Parents also answer before and after questionnaires with children help.

Questionnaires and drawings allow the evaluation of course activities, the impact of the week theme and the success of the course on promoting plant knowledge and awareness to guarantee an ecological behaviour that copes sustainability.

This work has shown relevant results in terms of taught concepts and attitudes concerning an active participation of more than 200 people, including children, their family and friends attending the Lisbon Botanic Garden's holiday courses in 2005. Moreover, the number of children that are willing to participate increases every year, as well as those wishing to repeat the experience. Courses evaluation results validates the programmed activities and methods towards their objectives and have shown that permanent family group awareness about the importance of plants, as well as ecosystems preservation, is a potential effective way to promote Nature conservation and sustainability within a social behaviour framework.

The positive impact demonstrated by the results of these activities indicates that it should be repeated as many times as possible. The idea was born in 2004 and since then it has grown heading for future development. Holiday courses at the Botanic Garden of Lisbon are now very important events within Lisbon community bringing more urban people to know the Garden and to adopt new ecological attitudes to achieve sustainability as they play with plants to learn for life.

References

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