

THE ROLE OF PUBLIC INFORMATION AND EDUCATION IN PROMOTING THE IMPORTANCE OF NATURE

- a responsibility of botanic gardens

Summary

This paper illustrates some of the educational and public information programmes that are carried out at the Botanic Garden of the Institute of Biology of the National Autonomous University of Mexico. Important aspects required for planning programmes as well as ideas on how to organize workshops are summarized. One of the main objectives of these activities is to motivate people about the importance of conserving nature as our cultural heritage.

Introduction

Today scientific education is necessary to understand the ecological basis of our existence and the steps that we will need to take in order to improve to improve the quality of our lives (Raven & Johnson, 1986). The implementation of this idea produces complicated results.

In developing countries such as Mexico we have to ask ourselves some questions before we design an educational programme related to nature. In order to optimize the results we need to consider the following questions: At what level can we educate the public so that they are more conscious of the importance of the environment? Who is going to be responsible for making this decision? Is our educational system designed to accomplish this challenge? What institutions are going to participate in this programme in addition to those of the conventional system of education?

All these questions are urgent and need to be answered now because of the human-generated deterioration of nature. It is imperative that we solve these problems right now, especially in developing countries where the population is increasing rapidly.

Botanic gardens always have played an important role in education and dissemination of public information concerning plants. There are several examples where gardens have developed complex programmes for the conservation of nature. One example is the programme at the Jardín Botánico Canario, Viera y Clavijo in Las Palmas de Gran Canaria

where biologists, lawyers and architects acting together have rescued areas with endangered species (Willison, in press). Other examples are the programmes that have been developed in two USA. gardens, the New York Botanic Garden and the Missouri Botanic Garden. Each year they show different aspects of the importance of nature. Other exemplary programmes related to desert plants are those developed by the Desert Botanic Garden in Phoenix and the of Arizona-Sonoran Desert Museum, both in Arizona, USA.

In Mexico, we have several gardens that have an educational programme and now there is a growing interest in increasing the scope of the themes covered by them. The Mexican reality demands more action, and the community in general is interested in fields related to the conservation of nature. Mexican botanic gardens have developed courses, lectures, workshops, guided tours, and varied research programmes. We have planted the seed that will bear fruit in the future.

Our educational programmes have been constantly improving, Nevertheless, the current necessities demand more attention. Moore (1974) mentions that the botanic gardens in the future must have a responsibility for public education. Frankel and Soule (1981) draw

attention to the opportunity that botanic gardens have to teach young and old people who visit the garden, about the problems that exist today, such as the endangerment of the plant species. The time is right when botanic gardens must work with teachers of public education at all levels, especially from elementary



Medical doctors analyzing and learning botanical aspects of medicinal plants

school to high school, to enrich public knowledge about nature. Those children will be the adults of the future, and it is important that they realize the plants and animals are a very important part of their cultural inheritance, that our ancestors cultivated and amplified (Linares, 1985).

We know that trying to convince people about an idea, a concept, or new theories is not easy. It takes continuous effort. It is not enough to organize isolated programmes; they need to be repeated again and again. The proven experiences should be repeated as long as we know that the message is reaching a larger public.

The Mexican background

Mexico is a multicultural country where several ethnic groups live in the same region. For that reason we have to work with all of them at the same time, in order to accomplish the goal of the conservation of our resources for future generations.

Another distinctive characteristic of Mexico is that most of the population live in cities. Mexico City alone has about twenty million inhabitants. The total population of the country is around eighty million people. In 1980 there were six million children under fifteen years of age (INEGI, 1980).

Promoting a message about the importance of environmental conservation is a high priority for a developing country such as Mexico. We must make an effort to increase awareness about the problems that are threatening ecosystems now, such as pollution, the over-collection of species and the over-exploitation of our forests. If we wait too long, it will be too late to organize conservation action for resources that have disappeared.

Since the creation of the Botanic Garden of the Institute of Biology of the National Autonomous University of Mexico (UNAM) 32 years ago, education and public information in the field of botany have been part of its fundamental objectives. Nevertheless, only in 1981 was its Department of Education formally organized and charged with managing all the activities related to the public. The philosophy in the UNAM's Garden has always been to distribute the results of its research

programmes and to focus on several aspects that are important to our country. We believe that in this way we can create a public sensitive to the importance of plants and of nature. Up to the present time we have organized public lectures, workshops, symposia and congresses, as well as other events for various sections of the public. We have worked with illiterate people, students, as well as housewives, children of several age groups, biologists, medical doctors, botanists and others for whom specific programmes have been developed.

For instance, if we want to create awareness about the importance of protecting the forest, we must work with woodcutters, plant collectors, farmers, rural communities, lawyers and the governmental officers and other people who are associated with problems that now are facing the forest.

We have found that the techniques and elements we have developed for our programmes can be applied to other fields of botany, making some modifications according to the objective and the public to whom we are speaking.

The main objective of this paper therefore, is to point out some ideas on the organization and application of programmes that can be useful in the field of biological education of biology and especially in the conservation of nature in countries similar to Mexico. We hope that our experience can be adapted and applied in other regions.

Important factors in designing an educational programme

Based upon our seventeen years of experience, we have found that in Mexico, people are interested in every topic related to nature. We believe that it is important to consider the following points before planning a programme;

- the section of public to be reached
- the focus of the problem or subject
- the choice of didactic technique most suitable and accessible (games, corporal expression, television programmes, radio, printed material, etc.
- the obtaining of advice from the specialists in the field of study

- the outline of the programme to be used
- the choice of an appropriate schedule for the target audience
- the advertisement of the programme.

In the UNAM Botanic Garden we have carefully considered each of these aspects which have resulted in successful programmes.



As part of the children's Medicinal Plant workshop we take them to the market to learn about the most important plants

Who must be included in the programmes?

This is an important aspect that has to be analyzed before the initiation of every programme. Generally educational programmes are expensive and one mistake could be very costly. Sometimes, if this question is not answered on time, it could cause the failure of the programme.

The programme must be aimed at people who:

- have the opportunity to take some action in the field of interest under study
- are going to gain advantage from the programme
- can multiply the information they have gained
- will appreciate and better understand the major themes.

Actually in a country like Mexico, it is urgent to design programmes for teachers from elementary school to high school who are working with a large number of students. The botanic gardens in Mexico are very few and personnel working in the educational field are even fewer. That is why direct actions oriented toward a public sector that can not multiply and spread their experience would have a limited impact. We do not

want to imply that courses of limited focus are not useful, but we want to emphasize the importance that our effort should address a larger public.

In the UNAM Botanic Garden now we are working mainly with children from elementary and high schools, as well as with groups with special interests. Recently we have implemented programmes for teachers and personnel from other botanic gardens so that they can take advantage of the techniques we have developed and the knowledge from our programmes, and we are repeating our programmes in other Mexican botanic gardens. We are currently organizing a group of volunteers who have been participating in the different activities of the garden. We hope in the future these volunteers can multiply their experiences by sharing what they have learned with new groups.

Educational experiences carried out in the UNAM Botanic Garden

In addition to the daily work undertaken at the botanic garden, such as guided tours and attending to the general visiting public, we organize a series of workshops of one or two days in length where we cover specific areas such as: "Know the grasses", "Know the orchids", "Know the agaves", "Know the aquatic plants", "Know the plants used to make handicrafts", "Know the medicinal plants", "Know some plants uses as natural dyes", "Know the seeds used to make handicrafts", amongst others. Normally participants know little about each of the subjects under study and these workshops give them much new additional information. If they participate in more than one workshop they will gain complementary information about several aspects of the sametheme.

These workshops have been planned at several levels. For instance, the medicinal plants programme has been presented to specialized healers (some of whom are illiterate) who normally use the medicinal plants empirically, but have little knowledge of the botany of the plants they use. A similar workshop on medicinal plants was organized for housewives and another for nurses and doctors from the United States who are working with immigrant Mexican labourers. Also, this workshop has been presented to holistic doctors, children and biologists.

The key has been to choose the different aspects that could interest those particular groups. Specific examples have been modified according to each group focus. For instance, in the case of the healers we use plants from their local areas in order to motivate them to know more about the plants that they use. In the case of the children, we choose plants that are not poisonous and can be used without any problems. In the case of the housewives we demonstrate plants that are used normally as home remedies, and so on.

The people who work with the Department of Education in these programmes are academic members of staff who carry out research in the botanic garden or in the Institute of Biology. Others are, for example, researchers from other Mexican institutions or from other countries.

However, we insist that the instructor be a specialist in each field and we always provide support.

One aspect that we think has been the key of our success is that we always include a practical activity where the participants can touch the material, smell it or, if that is possible, eat parts of

the plants. Those activities help participants to feel familiar with the plants and with the garden environment, and will encourage them to return to the botanic garden on further occasions.

Another fundamental aspect of our programme is that we link every activity with our living plant collections. We normally include a guided tour as part of the course so that the participants can recognize the particular features that had only been mentioned in theory while using



Housewives identifying the common medicinal plants by smelling

the living plants from the garden. One example to illustrate this is from the workshop "Know the agaves". In the beginning, participants gain a theoretical introduction to this plant group which includes botanical information of the family and its genera. Audio-visual material and written information are always used which include mention of ethnobotanical aspects relevant to our culture. Later, the teacher demonstrates a series of products made from agaves, and the students can taste them. After those activities they visit our living collection of agaves where they can see a sample of the variety of agaves that grow in Mexico. These workshops have had very productive results and are being continued as an ongoing programme.

Our "Golden Rules" for these programmes have been as follows:

1. be as well organized as possible
2. be punctual (in Mexico that is unusual)
3. include in the workshop everything offered beforehand
4. maintain the instruction area clean and comfortable
5. provide written information that the students can use in the future
6. be courteous to the participants so that they feel at home and that they are invited to come back again.

This last recommendation is obvious in most cases. Even though sometimes we might overlook some minor points, we realize that they affect the reputation of our Institution.

Conclusions

The most important aspect in the field of education and public information is that we, the educators, have to teach the truth in the most attractive way possible. It is important to know how to create attractive material to call attention to even the most arid subjects.

Today the botanic garden plays a fundamental role in the field of conservation, by motivating people and creating interest in nature and its protection. In this way educators and teachers can go to the botanic gardens with their ideas and look for more information. Together their efforts can have a multiplying and far reaching effect.

Unfortunately, in Mexico the programmes that are used in elementary and secondary level teaching need improvement with regard to their content in the field of nature conservation. That is the reason why the programmes carried out in other institutions such as botanic gardens are complementary. In the garden we can prepare teachers who work directly with students and in this way they can motivate the students and encourage them to share their knowledge about conservation. If we work today to conserve nature, we will have a better world for the future.

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Acknowledgements

I am grateful to Dr Robert Bye, Director of the UNAM Botanic Garden for reviewing the text of this paper in English.

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