

Innovating popular science education through activities in a botanical garden

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Abstract:

With the environment education further advanced in the compulsory education, the state-run botanic gardens, whose responsibility is to promote and popularize scientific knowledge, raise and enhance the public awareness of plant diversity conservation, are shouldering the heavy pivotal strategic responsibilities. Wuhan Botanical Garden, one of the key education centers of Chinese Academy of Sciences, has been devoted to promoting the public education of plant diversity for a long history.

In order to speed up the popular science education, Wuhan Botanical Garden has developed special education methods and tools from its practices in view of three different ages of people: adults, youth, and elementary and middle school students. This paper provides a detailed description of the popular science education programme through six cases, turning learning about plant science into a series of entertaining activities.

Introduction

Over the past 50 years, Wuhan Botanical Garden (WBG) has become one of the several principal gardens in China, covering 70 hectares of land and water in the great central city of Wuhan, with a population of over 8 million population. More than ten landscapes including special gardens and beautiful horticulture spots have been established, such as “*Aquatic Plant Garden*”, “*Rare Endangered Plant Garden*”, “*Chinese Gooseberry Garden*”, “*Ornamental Garden*”, “*Rose Garden*”, “*Pine and Cypress Garden*”, “*Bamboo Garden*” and so on. There are always so many kinds of flowers blooming around the year, and various interesting strange and rare species growing vigorously in the large greenhouse. Moreover, many sorts of tourism facilities are available in the garden. About 4,000 species have been cultivated. In spring and fall, magnificent exhibitions of famous flowers are regularly held in the garden. WBG has gradually developed into the biggest germplasm centres of central China and a key biodiversity protection base of north subtropical flora in China.

WBG is not only a scientific research centre for plant science, but also a base of popular science education and popularization. WBG strives to seek an approach to draw local peoples', especially young students, interest in attending all kinds of entertaining activities, to achieve a target of spreading science concept and method, and promoting people's science sense of protecting plant diversity. Methods and tools have been designed and applied for creating a combination of knowledge of popular science education and interest with entertaining activities and games. Our objective is that WBG should become a platform combining science research, plant diversity protection, popular science education, cooperation exchange, tourism and entertainment. The innovative activities in WBG has attracted double the number of visitors per year for the past two years. More

and more citizens in Wuhan have become WBG members in order to visit WBG with their family. WBG has been awarded four stars from state tourism spot as a provincial popular science education base.

Method and Tools

How do we bring visitors into WBG?

A variety of methods and tools are used to draw the public's interest and design entertaining activities in popular science education. We can use these to achieve our target of spreading science knowledge in protecting plant diversity in popular science education. We have set standards for designing entertaining activities;

1. making good use of our resource such as plant spots and species' characteristics in WBG,
2. pledging the public abroad attention to our activities by all means,
3. designing all activities with interest, knowledge, entertainment and competition,
4. award excellent participants in activities as small gifts to encourage them to attend activities next time,
5. collecting reflecting information from participants in order to improve activities.

How to make the public abroad attention to our activities?

We use internet, media such as TV and newspaper, and networking in schools or other organizations as our powerful tools to draw the public attention to our activities.

The module used here in our activities is that there are three key elements: unique resource-facilities in a botanical garden exist exclusively, the public media involves in the activities and activities' subject or purpose must be paid attention by the public.

Case Analysis

Case 1, "Under water forest",

Making use of WBG's unique resource, the aquatic plant gardens, which is the biggest center of aquatic plant exhibition and conservation, we are able to demonstrate visitors aquatic plants in glass showcases whom have never been seen before. As we know, these aquatic plants grow usually in deep water and form "under water forest". Visitors can observe easily that they can produce oxygen in the water and understand why they can clean water through a visible subject in our popular science education. Visitors are told that the aquatic plants can take toxic matter from the water just like a "trash recycling factory" in the water, and produce oxygen and take carbon dioxide just like a "lung" in the water based on our scientific research results.

After visiting this aquatic garden, the father told his son "It is so important that aquatic plants can clean our water environment and scientists working here try to find a solution of recovery polluted water, their job will benefit all of us. Son, when you grow up, I hope that you become one of them." The son answered "I would like to." Case 1 demonstrates that we need huge fund to support setting up unique facilities to show the public ecosystem and biodiversity in order to explain abstruse scientific concept. In this aspect, WBG has improved a

lot in building more than ten unique facilities by innovating designs. This kind of visiting unique facilities' activity is suitable for all age groups.

Case 2, “Exploring Treasure in a Forest”

This worked with several groups of young students in WBG. They searched for treasure in the WBG forest in groups, completing cards about plants' morphological characters. The group which finds more correct plant names in a limited time are winners. This activity challenges students' remembering comprehension and team working ability. Finally, there are some small gifts for winners, it is encouraged that the students participate positively in competitive activities and they grow up in healthful psychological mature in a competitive environment.

Case 3, “Plant Knowledge Competition in TV Program”

There are over 8 million people living in the great Wuhan city. To spread plant science knowledge widely in the public, we cooperate with the local television station to cover “*Plant Knowledge Competition*” as a programme. There are about one million high school and college in Wuhan, the second largest student population in China. The programme invited different college students who delegated their own colleges in the plant knowledge competition. Although only college students participated in the TV programme about plant knowledge competition, a lot of the citizens in Wuhan watched the TV programme and, plant knowledge was spread throughout the public by the powerful public media-TV, it has produced significant influence in the Wuhan public.

Case 4:”Harvesting Chinese kiwifruits in WBG”

This is an activity in fall that is sponsored by WBG. The kiwifruit garden in WBG is one of most famous gardens in the world. We involve WBG members and their families in this activity, and thus build a good relationship with our supporters.

Case 5: “Photo Shooting Competition in WBG”

Many of our members are photography enthusiasts. WBG sponsors a seasonal competition, with themes such as “*water lily photo shooting competition*” and prizes for winners. Many senior members become involved. Meanwhile, the best photos are exhibited in the visitor centre

Summary

Our experience is that innovation is key to popular science education. It is necessary for us to satisfy the public taste in order to keep visitors back to the botanical garden. Modern tools such as internet and public media-TV, newspaper, radio etc. are important for us to draw the public attention to popular plant science. Unique facilities are our foundation for spreading science concept. Successful activities with interest, expertise, entertainment and competition will bring popular science education with participants' pleasure together.