

## **Botanic garden – a place for the development of alternative education**

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**Abstract:** The potentials of out-of-school education offer to students and their teachers a wide range of suggestions which could improve excursions and seminars in the field of natural sciences. It is an alternative to classic school education that could refresh the topic. Important question is how to pass the knowledge to children which is difficult in such less popular themes as botany. Our article presents particular activation methods and shows alternative approach of education which we use in programs for schools in our botanic garden. This includes, above all, didactic games, methods of experiential education (learning through doing) or group work in the frame of various enquiry-based instructions.

**Keywords:** out of school-learning, botany, guided tours, educational programmes, Prague

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### **Introduction**

The organizations dealing with Out-of-school learning provide to children and their teachers in the sphere of natural sciences wide range of offer, such as all sorts of excursions or lectures. It is a possible alternative to In-school learning, which could diversify the studied topic. Important question is how to pass the knowledge to children in easy to understand and interesting way. This is especially difficult for less popular themes, such as botany.

### **Prague Botanic Garden**

Prague Botanic Garden was established in the year 1969, but its whole year opening is dated to 1992. Botanic garden has three parts - Fata Morgana

greenhouse, which was opened in 2004, outside expositions and St. Claire's vineyard. Over the years have risen both the area of the botanic garden and number of visitors. The area of outside expositions has today more than 25 ha and the attendance of the whole garden is more than 300 000 visitors per year. Similarly grows the interest in guided tours, both for the school groups and for the adults or seniors.

### **Current status**

First guided tours appeared in 1992, but were quite rare. Between the years of 2006 and 2008 a packet of work sheets „Trojskou kotlinou křížem krážem“ originated in cooperation with Troja secondary school and it was funded by European social fund (ESF) and Prague city hall. This project processed different themes, such as carnivorous or coniferous plants, cacti and succulents, etc.

Between the same years there was also other project „Botany education and environmental learning in the surrounding of botanical gardens“ financed by ESF and Union of botanical gardens. In this project participated also other botanical gardens from the Czech Republic – in Děčín, Plzeň, Olomouc and Tábor.

Between the years of 2010 and 2012 the Troja secondary school released a big project funded by ESF in which were created work sheets for Troja's area. These materials are intended for individual work without guide and process themes from Prague botanic garden as well as Prague Zoological garden or wastewater treatment plant.

These projects led to a bigger interest of schools for guided tours. The worksheets have been long aimed only at secondary school students and that is why a series of educational programmes for younger children has been created. This should help the teachers to excite interest of children and to revise or deepen the knowledge. Nowadays our botanic garden offers more than 21 programmes or tours for children from kindergarten to secondary school. In 2014 as much as 535 guided tours for schools and 237 tours for adults took place in our botanic garden. Every year we improve the knowledge of our part-time job employees who help us with the guiding. Usually they are students from the Faculty of Education or Faculty of Science.

The biggest disadvantage of the tours is increased entrance fee since spring 2015.

### **The most common methods and forms used during the guided tours and educational programmes**

The advantages and risks of methods used in tours and educational programmes are presented below. From our experience it is very important to use activation methods mostly by kindergarten and primary school children.

1) experiential learning

**Advantages:** spontaneousness, joy of cognition, development of communication, place for the creativity, experimentation, use of the senses

**Risks:** need of the development of experiential learning attributes, easy influenceability, danger of negative experience

2) didactic games

**Advantages:** decrease of curriculum difficulty, emotional stimulation, development of respect of rules, socialization, problem-solving situations, development of communication

**Risks:** understanding of the game rules, assessment of learning effect, respecting rules and other players, participation of children, time-consuming preparation of games, possibility of conflicts

3) short-term group work

**Advantages:** cooperation and partnership, is motivating, reinforcement of social interaction, mutual learning, own tempo, self-fulfillment, teacher as an advisor

**Risks:** time-consuming, incorrectly assembled groups, poor cooperation, noise and disturbing of others, difficult coordination, non-participation, unassignment

## **Overview of the topics of educational programmes in each exposition**

### **Fata Morgana greenhouse**

The way around the world in 225 m

The bright colours of plants

On the wings of butterflies

The carnivorous plants

The climatic zones

The orchids

The cacti and succulents

Behind the scenes at the greenhouse or computer in the role of a gardener

### **Outside expositions**

The best plants around the world

The healing plants from the grandma's garden

The colours in nature

The tree, smaller tree, the smallest tree

A short jump to the amphibians

A trip to the world of trees

Become investigator in the botanic garden

The leaf or leafing through in the botanic garden

Medicinal plants

The coniferous trees

A look to the past or a small geology window

From the plant to the wine or how it works?

Seeds and fruits on the way

## **Practice notes: What works well in our educational programmes?**

### **Work sheets:**

- cover as much picture material as possible
- every task should be unique (use different word games such as crosswords and wordfit puzzles, etc.)
- space for own creative thinking
- the fewer, the better

### **Educational materials:**

- use products of nature to complete the information about plants
- if possible, let visitors touch everything
- educational materials should be in colour, interesting and lasting
- create innovative materials to demonstrate the theme

### **Tours and programmes:**

- suitable number of visitors in one group
- the guide is responsible for the interpretation of the programme, not for behavior of children
- modification of the interpretation for each age (no Latin names for kindergarten children, etc.)
- the guide should often ask questions

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