

MUSEU DE CIÊNCIAS DA TERRA ALEXIS DOROFEEF

DEPARTAMENTO DE SOLOS - UNIVERSIDADE FEDERAL DE VIÇOSA

# Raising awareness about soil diversity: The Education Programme of the Earth Sciences Museum Alexis Dorofeef, Minas Gerais, Brazil

# **SOIL EDUCATION**

Soils are usually overlooked as part of geodiversity and geoheritage. It is necessary and vital to raise and increase public awareness about soils, their functions and diversity, to secure human and natural heritage. Furthering public awareness involves developing a better understanding of soils, as well as a personal and collective commitment in the stewardship and protection of them from degradation and loss. In this context it is necessary to develop a "soil and sustainability culture", based on an educational framework. The many ways in educating for the environment from and to soils characterize Soil Education. It is assumed as a set of tools to promote environmental education having soils as central and motivating theme. Like environmental education, soil education is a dynamic, permanent and participative learning process. Soil education aims to bring the significance of soils into the lives of people, and so the need of its conservation and sustainable use. The fact soils are an essential component of the natural and human environment everyone is familiar with makes meaningful learning possible and has a potential to change values and attitudes, which contributes to raise environmental awareness. In the Brazilian context, a programme of soils and environmental education was created in 2000 to develop formal and informal education in the region of Viçosa, Minas Gerais.

### RESULTS

Since the start of the programme in 2000, different activities, methodologies and materials were shaped and developed to approach and understand soils, its functions and diversity. They also intend to alert people for the need to protect and care about soils acknowledging them as part of our geoheritage. The activities are developed in four main lines: (i) soil education at basic education schools, (ii) professional training, (iii) expositions and outreach activities, and (iv) information and learning materials.

#### Soil education at basic education schools.

The main public that visits the Museum by guided tours are basic education school groups. The visit complements or even replaces lab classes. For this a special exhibition was set to approach soils: the *Espaço Proibido não Tocar* (Forbidden not to touch space). It is composed by hands-on experiments and demonstrations, as well as by a section to prepare and use paints made with soil materials. In the museum garden the students can visit a pit to investigate the soil profile and explore an earthworm's breeding case.

Interdisciplinary projects on soils and environment are developed in schools with specific groups in the course of a few weeks. The projects start with a participatory diagnostic of what they know and want to know about soils. Activities include group discussions, field visits and production of diverse materials. Paints and drawings are produced with soil materials and this serves as motivation to investigate the soils around the school area. Their previous knowledge associated with the newly built concepts are the basis to approach issues related to the use of soils and environmental impacts.



### CONCLUSIONS

The Soil Education action of the Museum is recognized and well spread among school communities in the town and its neighbourhood. Many school teachers approach the contents and methodologies they learned at the Museum, as well as many of the students that did their practical's at the museum do. Today the Museum is spreading its knowledge about soil throughout the region, by means of temporary expositions and educational activities. Despite its achievements, the Museum still faces the challenge to broaden its action, reaching different and wider publics, making both the idea of visiting a museum and the knowledge about soils more popular.

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#### **Professional training and updating courses**

Workshops and courses are provided to different groups: school teachers, exhibition facilitators, farmers and social movements, university students and general public.

The development of itinerant activities started with the exposition Solos: evolução e diversidade (Soils: evolution and diversity), created for the 2008 National Week of Science and Technology. The exposition The school teachers training was cnceived to tackle the fact that soil contents are usually not approais a low cost set of panels and soil materials and demonstrations coupled with a workshop on soils for ched by them: they consider the subject complex and theoretical. Courses are given during one year people interested in becoming exposition mediators. In each town visited the exhibition is presented in and a participatory assessment of courses done from 2004 to 2006 (Cirino, 2008) showed that teaup to five different localities, many of them being schools. In the last three years, more than 30 schools chers that previously avoided soils in their classes not only taught soils but also approached different in 8 different towns received the exposition. Around 150 mediators were trained on soil contents in the contents in a wide diversity of manners. Their everyday practice was empowered and transformed by workshops, 70 of them being basic school teachers. Those figures represent a real potential of spreading the courses: they started to use the neighbouring school space more intensively and were not anymoawareness about soils. In different places and towns, people's testimonies are taken and it is possible to re school book oriented, but creating their own classes. observe an increase in recognition of soils, but it is still difficult for some to answer the basic question Two to three days workshops on soils to train exposition mediators in other towns and regions have ..."and what do you do to care about soils?" Another realization of our efforts has been that what we call general public is not that general, since visiting a museum or a scientific exposition is not a commo also been a source for new projects and insights, promoting the continuity and permanence of the soil education activities of the PES programme. thing people do in their leisure times. Thus, our general public is still a specific public.





## The SOIL AND ENVIRONMENTAL EDUCATION AND OUTREACH **PROGRAMME (PES)**

of the Alexis Dorofeef Earth Sciences Museum, at the Soil Department, Federal University of Viçosa, Minas Gerais, Brazil develops different activities linked to formal and non-formal education on soils. Its main audience are basic education teachers, school children and the general public. Its pedagogical background is based on Paulo Freire's educational approach, the social-constructivism (Freire, 1996), which considers social inclusion knowledge building, horizontal learning and collective action. This approach avoids a learning process based in simple knowledge transference, promoting instead the investigation and experimentation based on the previous knowledge and experiences of each individual (Muggler et al, 2005)

#### **Temporary and itinerant expositions**



### REFERENCES

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#### **Development of learning materials**

Different materials, printed, hands on and audio visual, have been produced both to support the activities of the PES programme and to promote and popularize soils, including didactic brochures. Panels, folders, leaflets, videos, podcasts and radio spots are spread and distributed to different groups and are easily available. The PES projects have also been published in the social networks, with its own blog, twitter and facebook profiles.

Additionally, didactic collections composed by rocks and soil samples and demonstrations made out of simple replaceable and recyclable materials are provided for school labs. Besides, students and school teachers are stimulated to collect and organize their own collections and experiments, under the supervision of the programme, if required.

A social technology to produce paints with soil materials has started as children's leisure at the Museum has been also a way to promote and spread information about soils and its diversity.







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